finish

THE MAGAZINE OF

Appliance AND

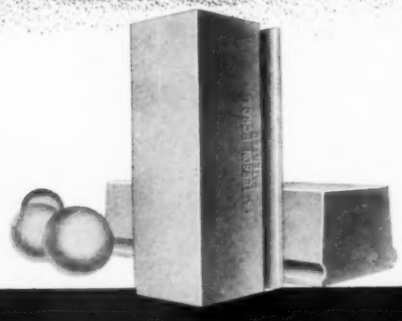
Metal Products MANUFACTURING

FROM RAW METAL TO FINISHED PRODUCT

Patterson

HIGH PERFORMANCE GRINDING EQUIPMENT

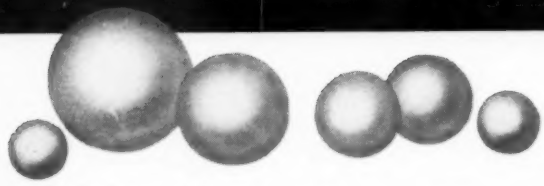
FOR PROFITABLE PROCESSING



PATTERSON Pebble Mills are the recognized champions in the ceramic field. Available in all sizes to meet your production requirements.

POROX

HIGH DENSITY BALLS AND LININGS



ARLCITE Grinding Balls are Patterson through and through—developed by the pioneer in high-density grinding balls, with experience over a longer time and in more industries than any other manufacturer. ARLCITE Balls reduce grinding time 25% to 30% —produce **more**—wear **longer**—and **cost less** per unit of production. Specify them!

ARLCITE "B" Linings wear 50% longer than Porox, but are moderately priced.

PATTERSON EQUIPMENT for the enamel industry is the result of 50 years' experience in that field. Patterson Mills and Patterson Enamel Storage and Pressure Vessels provide the maximum in long life and satisfactory service.

Richard L. Cawood

President

The finish that acids don't stain helps sales

When buyers hold back and it's tough to make sales, you can get a real edge on competition by putting extra sales effort behind products that have acid-resisting porcelain enamel finishes.

This durable finish is not damaged by fruit juices, alcohol or commonly used chemicals which tend to permanently mark or destroy many other kinds of finishes.

A porcelain enameled finish gives your products many other advantages too. It is called the "lifetime finish" because it is made of hard, rock-like minerals that are not affected by time or rust. After years of service it looks just as good as the day it was fused to the base metal.

WITHSTANDS HEAT

Porcelain enamel is easy to clean and keep clean. Soap and water will usually remove all traces of stain and dirt. Even hot irons or forgotten cigarettes won't damage porcelain enamel. Its hard glossy surface withstands any temperature it is likely to encounter in home service.

You can finish your products with porcelain enamel in any color, in any variations of shades, and in textured or plain surfaces. And you can be sure the color won't "fade out."

Of course, the metal beneath the Porcelain Enamel surface must have excellent bonding qualities, flatness, and uniform fabricating characteristics. That is why more manufacturers have used more Armco Enameling Iron over a longer period than any other enameling base. That is why too it has become known as the "World's Standard Enameling Iron."

ARMCO STEEL CORPORATION

4363 Curtis Street, Middletown, Ohio

Export: The Armco International Corporation

ARMCO

It's as simple as that...

"OUT OF OUR CARTON - INTO YOUR DOOR"

PERMA-VIEW

..THE WINDOW YOU CAN SEE THROUGH

Always....

CROWN STOVE WORKS is offering PERMA-VIEW oven door windows "as optional equipment on all models at the present time", according to J. C. Rogers, Vice President — Sales

Yes sir, it's as simple as that. The PERMA-VIEW oven door window comes to you ready for immediate installation in your range—to add a sales feature second to none, as the demand grows for "visible baking."

The strong steel encased, double pane PERMA-VIEW window incorporates the finest quality heat resisting glass. It is mechanically sealed to prevent infiltration of vapors and to eliminate "fogging."

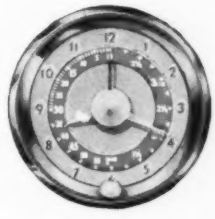
More and more range manufacturers are turning to PERMA-VIEW as a practical, economical and effective sales feature for their new models. We will gladly work with your engineering department in adapting its use to *your* new range. Write for complete information.

MILLS PRODUCTS, INCORPORATED

1015 W. MAPLE ROAD • WALLED LAKE, MICHIGAN

contents in front

It's the distinctive Minute Minder and Clock by LUX...



LUX Time
YOUR TIME-REMINDER LINE

THE LUX CLOCK MANUFACTURING COMPANY • WATERBURY 20, CONNECTICUT

MEETINGS

WARM AIR HEATING, AIR CONDITIONING ASSN.

National Warm Air Heating and Air Conditioning Association, 40th annual meeting, Hotel Cleveland, Cleveland, Ohio, December 2-3.

ENAMELER CLUB MEETINGS

Eastern Enamelers Club, tour of Fairless Works of U.S. Steel Corp., Morrisville, Pa., December 5.

Midwest Enamelers Club, LaSalle Hotel, Chicago, December 12.

COOKING, HEATING MFRS.

Institute of Cooking and Heating Appliance Manufacturers, December 7-9, Netherland Plaza Hotel, Cincinnati, Ohio.

KITCHEN CABINET MFRS.

Steel Kitchen Cabinet Manufacturers Association, Chicago, December 9.

HOME FURNISHINGS MARKET

International Home Furnishings and Winter Home Furnishings Markets, The Merchandise Mart, and The American Furniture Market, Chicago, January 4-15.

HOME LAUNDRY MFRS.

American Home Laundry Manufacturers Association, annual meeting, Morrison Hotel, Chicago, January 8.

HOUSEWARES MFRS. EXHIBIT

National Housewares Manufacturers Association, 20th national housewares and home appliance exhibit, Navy Pier, Chicago, January 14-21.

PLANT MAINTENANCE SHOW

Plant Maintenance and Engineering Show, International Amphitheatre, Chicago, January 25-28.

You can add up MORE PROFITS with CENTURY frits

YES, as you enter the new year of 1954, you can add up more profits by switching to Century time-proved frits.

Today, more than ever, you will be looking for greater plant efficiency and economy of operation. And enameling plant profits today depend a great deal upon the frit you use.

Plants using Century porcelain enamels continue using our frits year after year. That's the history of Century customers — once they get accustomed to the economical trouble-free operation which Century frits give, they stick to Century.

You too may add up more profits by using Century time-proved frits. We welcome the opportunity of proving our claims.

FRIT from CENTURY

FRIT MASTERS

CENTURY VITREOUS ENAMEL COMPANY

6641-61 S. Narragansett Ave., Chicago 38, Ill.

DO *Your Products* FIT INTO THIS PICTURE?

Metal stampings have been the specialty of G. P. & F. for over 73 years. The illustrations above show just a few typical examples of contract parts we make for hundreds of customers. If you use deep drawn or stamped metal parts in your products, the chances are good that we have the facilities to meet your requirements. When you think of G. P. & F., think of over 1000 skilled people . . . 15 acres of production facilities . . . 293 deep draw and stamping presses . . . 97 welding machines . . . and a complete tool and die department.

G.P.&F.

Stamping • Drawing • Forming
Galvanizing • Welding
Lead Coating • Spray Finishing
Vitreous Enameling • Fiberglas

GEUDER, PAESCHKE & FREY CO., 1605 W. St. Paul Ave., Milwaukee 1, Wis.

finish SUGGESTION BOX

Servel uses packaged brazing rings to help cut production costs

THE use of packaged pre-formed alloy brazing rings is reported to be a great aid in cutting production costs at Servel, Inc., Evansville, Indiana.

Servel's electrical refrigeration division especially has found considerable merit in the packaged alloy brazing rings. The benefits are derived from a new packaging method which supplies precision-made rings, neatly fitted on cardboard tubes or dowel rods.

The new method of packaging eliminates waste from bent ends and tangling of the rings. The method has extra value as a positive inventory control; quantities on hand can be determined at a glance—preventing the possibility of a shutdown due to unexpected shortages of rings.

Source for further information on these packaged brazing rings may be obtained by writing to *finish*.

GENERAL ELECTRIC 9-MONTH SALES TOTAL $2.3 BILLION

Sales of General Electric Company for the first nine months of this year, totalling $2,341,048,000, represented the highest nine-months' level in the company's history and marked an increase of 29% over the same period last year, it was announced by Ralph J. Cordiner, president.

6.5 MILLION HOME HEATING PLANTS HAVE OIL BURNERS

More than 6,500,000 oil burners are now in use for central heating of residences, according to the Plumbing and Heating Industries Bureau.

SHIPMENTS OF GAS RANGES RISE 5.7% IN NINE MONTHS

Shipments of domestic gas ranges increased 5.7% during the first nine months of 1953 over the comparable period of 1952, according to the Gas Appliance Manufacturers Association. Gas ranges shipped during the period totalled 1,660,100 units, compared to 1,570,700 units last year.

GAS WATER HEATER SHIPMENTS UP FOR 16 STRAIGHT MONTHS

Latest reports from the Gas Appliance Manufacturers Association shows that for 16 straight months the shipments of automatic gas water heaters have exceeded those of the corresponding month in the previous year.

September shipments amounted to 177,500 units to increase the total for the first nine months of 1953 to 1,649,500, a 19.6% rise over the same period in 1952, according to Edward R. Martin, GAMA's director of marketing and statistics.

users say:

amazing air-inflated grinding wheel . . .

will do as much for finishing . . .

as the pneumatic tire did for transportation!

". . . reduces finishing time on most jobs up to 80%!"

". . . saves at least $15 a day in labor and abrasives on most production jobs."

N-106

MAIL THIS COUPON FOR A FREE 25-DAY TRIAL

Nu-Matic Grinders, Inc.
8224-A Carnegie Ave.
Cleveland 3, Ohio

Please send me your revolutionary new grinding wheel for a free 25-day trial. I would like the following model:

☐ #330 (3½" dia. x 3" band width) ($15.00)

☐ #535 (5" dia. x 3½" band width) ($17.50)

Name _____ Title _____

Company _____ Address _____

City _____ State _____

a leader in the field

Gentlemen:

I would like to congratulate you on the fine job you have done with *finish;* it certainly has come to the top, and is considered a leader in the field.

R. W. Willey
Works Manager
Revco, Inc.
Deerfield, Michigan

your comment is appreciated, Mr. Willey.

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very informative to stamping and allied industries

Gentlemen:

Will you please forward to us additional information on horizontal hole punching units, explained in your October issue. This sounds very feasible for use in the stamping industry.

We must compliment you on your fine work through the editing of *finish.* It is very informative to the stamping and allied industries.

M. F. Lindenmayer
President & Gen. Mgr.
Frelin Products Corp.
Benton Harbor, Michigan

information on horizontal hole punching units has been sent as requested.

"sold" on steel car blocking

Gentlemen:

Please accept my sincere thanks for furnishing the extra copy of the article in the October issue of *finish* magazine in connection with steel car blocking.

This company is thoroughly sold on the use of this type of blocking, and we are glad to encourage its use wherever possible.

H. A. Wetter, Supt.
Loss and Damage Prevention
Chicago and North Western
Railway System
Chicago, Illinois

Here's How...
MAC DRAW No. 40
SPEEDS UP THOSE "TOUGH" STAINLESS STEEL STAMPING JOBS...

If you have heavy runs in hard-to-work stainless steel, you will appreciate Mac Draw No. 40. This scientifically compounded drawing solution is particularly adapted to tough stainless steel operations, assuring you smoother, easier drawing, with greatly increased production and a minimum of rejects.

Where easy and thorough cleaning are of major importance, Mac Draw No. 96 (drawing oil) or Mac Draw V. E. (non-pigmented emulsion) are highly recommended. These popular and efficient drawing compounds are easily removed either by vapor degreasor or any common industrial cleaning process.

You'll find these and many other Macco products in use today in many of the nation's leading steel-processing plants. For a solution to your production problems, call your Macco sales engineer today, or write Macco of Chicago.

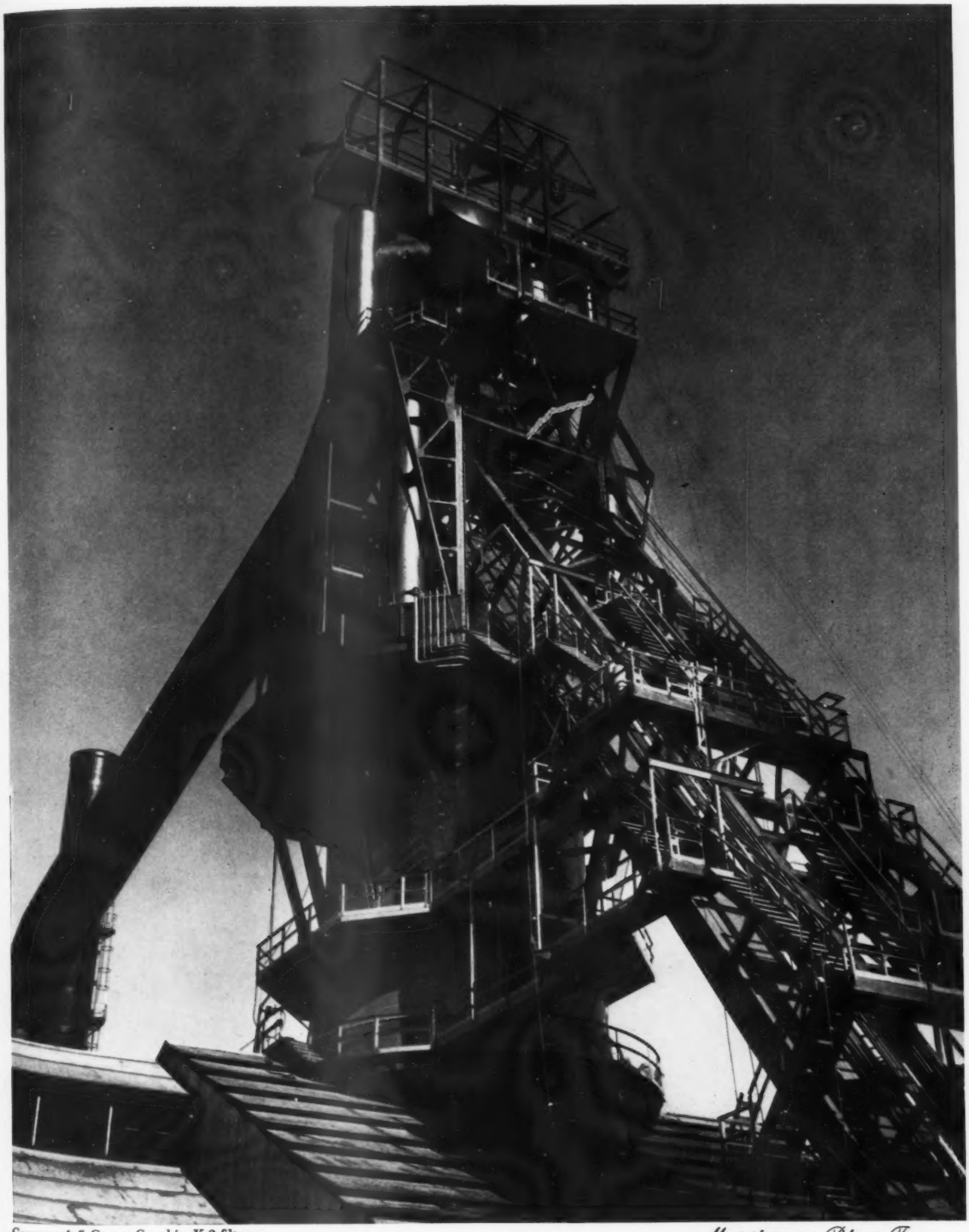
For every shearing, punching, notching, nibbling, forming, beading, blanking, drawing, drilling, boring, and cleaning operation, there is a Macco Compound that will help you to do the job better and faster. Repeated time studies and many case histories prove greatly reduced down time and increase in tool life of up to 500%.

MACCO
PRODUCTS COMPANY
CHEMICAL COMPOUNDS

Macco Compounds—The Best in The Long Run

FOR THE METAL WORKING TRADE--SINCE 1931

525 W. 76th STREET ★ CHICAGO 20, ILL.



Camera: 4x5 Crown Graphic, K-2 filter
Film: Super XX — 1/100 sec. at f/11

Middletown Blast Furnace

by Ray Miles, Armco Steel Corp.

TEN DOLLARS will be paid to any *finish* reader for a black on white 8 x 10 enlargement chosen for this page.

THE finish spotlight

This 1954 Westinghouse dehumidifier, equipped with casters for easy portability, can be used to remove moisture from room air — or — used as a supplemental space heater. The portable unit has a 1325-watt heating element that, when turned on, uses the dehumidifier blower to drive the heat into the room. Finished in a bronze beige color, the dehumidifier has a chrome-finished nameplate and a polished aluminum grille.

ROTOSPRAY

STANDARD for the enameling industry

Rotospray is the accepted method of sieving enamel slip at Admiral's refrigerator plant in Galesburg, Illinois. Rotospraying assists in the proper cleaning of milled enamel to insure against contamination, and to help in the production of Admiral's new appliances.

And throughout the enameling industry, hundreds of Rotosprays are on guard for the proper cleaning of milled enamel and to help in the production of the finest quality enamel finishes for refrigerators, ranges, washing machines, in fact for all types of enameled products.

For over two decades, Rotosprays have served porcelain enameling plants as the most successful and economical method of sieving enamel slip.

Yet, after more than twenty-three years of service, the first Rotospray put in service in an enameling plant is still in operation. That's the story of Rotospray's sturdy construction and trouble-free operation.

Photo shows Rotosprays in use in the mill room of Admiral's enameling plant in Galesburg, Illinois.

Contact us direct or one of our authorized representatives.

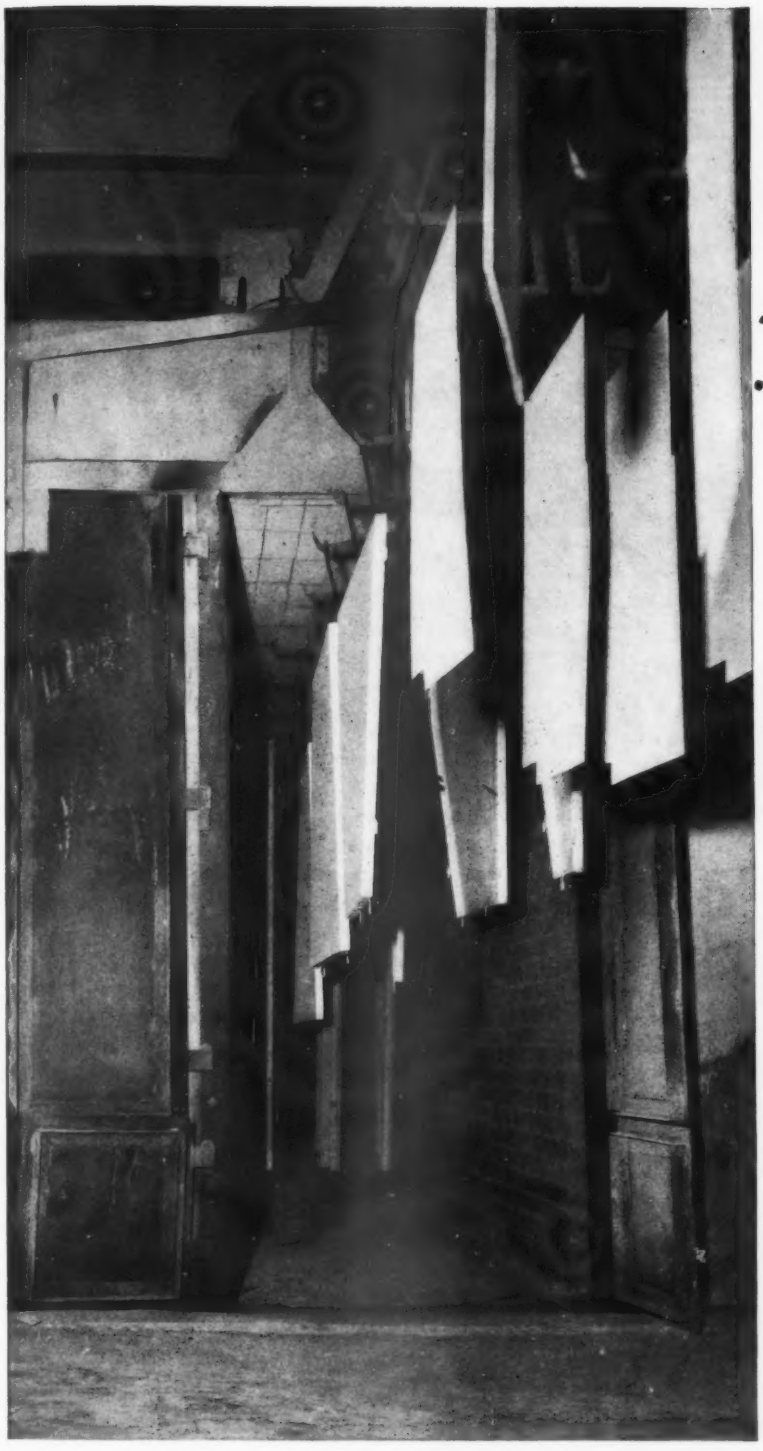
Sales representatives—
B. F. DRAKENFELD & CO., INC., New York, N.Y.
PEMCO CORPORATION, Baltimore, Md.
O. HOMMEL COMPANY., Pittsburgh, Pa.
FERRO CORPORATION, Cleveland, Ohio and foreign offices
CHICAGO VITREOUS ENAMEL PRODUCT CO., Cicero, Ill.

ROTOSPRAY
(Reg. U. S. Pat. Off.)

BRAUN CORPORATION, Los Angeles, Cal.
BRAUN KNECHT & HEIMANN CO., San Francisco, Cal.
Foreign representatives —
WATFORD ENGINEERING WORKS, Watford, England
ELOF HANSSON, Gothenburg, Sweden

ROTOSPRAYS ARE USED EFFECTIVELY IN CHEMICAL PLANTS, PAPER MILLS, AND POTTERIES

ROTOSPRAY MANUFACTURING COMPANY
562 WASHINGTON BOULEVARD • CHICAGO 6, ILLINOIS • TEL. DEarborn 2-7196



This is one of the world's largest continuous enameling furnaces in size of panels that can be handled. It operates at 1500 F, and is oil fired. The muffle and preheat floor are made of CARBOFRAX refractories; the support arches of MULLFRAX electric furnace mullite.

This plant followed the advice of CARBORUNDUM and

...Doubled the life of its Muffle

This continuous enameling furnace was designed for high production rates. Silicon carbide refractories, therefore, were used for the muffle and preheat-zone floor. This gave the fast rate of heat transfer and uniformity required; refractory life, however, was rather limited. After checking operating conditions we suggested that the muffle and floor be made of CARBOFRAX silicon carbide refractories engineered to the job.

The results have been excellent. These CARBOFRAX refractories already have gone twice as long as other silicon carbide refractories — and are *still giving good service*. They have required absolutely no down time since being installed.

Perhaps it would pay to have one of our engineers make a check for you. Whatever heavy duty refractories you use — silicon carbide, aluminum oxide, mullite, etc. — we can give you the experienced recommendations needed for optimum refractory service. We make *all* types of super refractories (the world's largest manufacturer) to give you the *right* ones.

Write or phone us today. No obligation, of course. The address: Dept. K-123 Refractories Div., The Carborundum Co., Perth Amboy, N. J.

CARBORUNDUM
Trade Mark

"Carborundum," "Carbofrax," and "Mullfrax" are registered trademarks which indicate manufacture by The Carborundum Co.

Rheem operates a single-purpose plant for industrial pail production

this photo story of a straight-line production plant, for producing 1500 fabricated and finished units per hour, should contain points of interest to every appliance and metal products manufacturer

by Gilbert C. Close • WESTERN EDITOR

Exclusive feature finish

Fifteen hundred 5-gallon sheet metal pails an hour . . . a pail every 2.4 seconds . . . a finished pail in about two minutes after the blanked body sheet enters the first forming operation.

Those are a few matter-of-fact, workaday records being established on the new 5-gallon industrial pail production line set up recently in Rheem Manufacturing Company's huge South Gate, California, plant.

Despite the relative simplicity of the product produced, this production line exhibits some of the most advanced sheet metal forming and joining techniques to be found in modern industry. Into it went all of Rheem's vast experience as a home appliance and steel container manufacturer.

While a few of the preliminary operations are accomplished on equipment that was already at hand, the production line itself, the place where the pails are rolled, welded, swaged, and otherwise finished, is a new compilation of associated equipment.

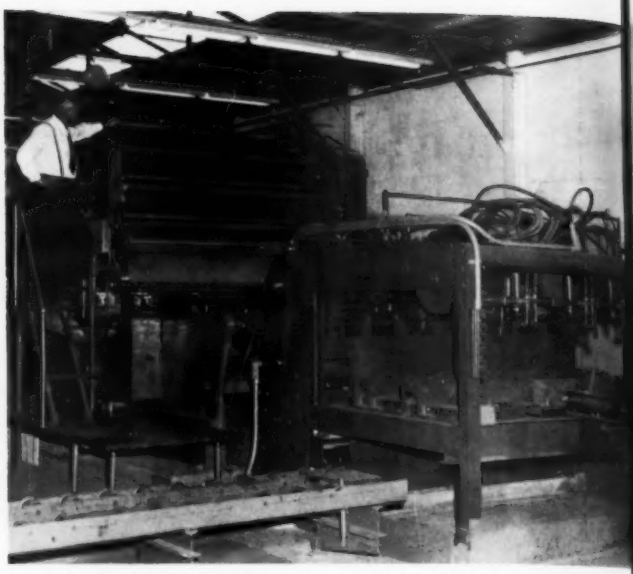
It is a single-purpose production line. Its goal is as pin-pointed as a well-aimed projectile in flight. This goal is to place finished pails on a conveyor leading to box car loading or to a waiting truck.

A finished pail per line employee every 43 seconds

The automatic features of the new pail line are vividly emphasized by the fact that only 18 employees are required to man it. In effect, this means that each line employee turns

1. *First operation in pail production is roller coating the desired solid color on the flat cold-rolled sheet stock. Sheet stock from which pail top and bottom sections will be punched is also roller coated. The stock is painted just as it arrives from the vendor. Each sheet will be sheared to produce 5 pail bodies, or 15 bottoms or tops. Sheet stock is loaded onto the roller coating conveyor by an automatic sheet handling machine.*

2. *View from discharge end of 240-ft. drying oven. The continuous conveyor in this oven contains 2500 wickets, with 1250 of the wickets operating in the drying zone at one time. Painted and dried sheet stock arriving in the wickets is automatically deposited on a conveyor which transports it to another sheet handling machine. Sheets are then taken back to lithographing dept.*



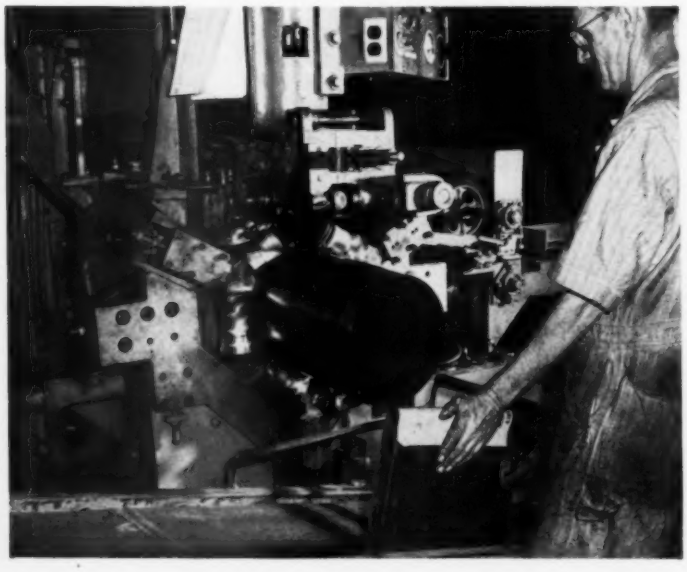
3. *This lithographing machine is used to imprint the required message on the roller-coated sheet stock. Five identical messages are lithographed on each sheet, each message being centered on one of the five portions of the sheet that will become a pail body after shearing. Another sheet handler is used to feed the sheets into the lithograph machine rolls.*

out a finished pail every 43 seconds.

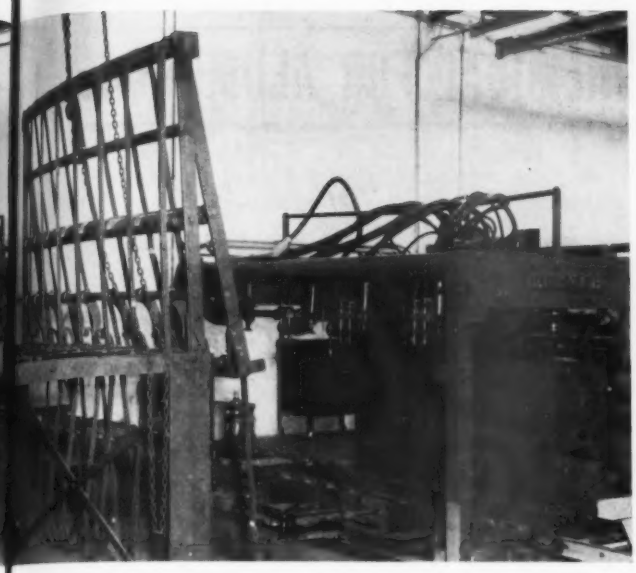
In setting up the line, Rheem engineers used standard production tools wherever they were efficiently applicable. Where standard tools would not meet production speed requirements, or where specific production operations could not be accomplished by a standard tool, Rheem-designed equipment was used.

Slow pressure-forming techniques are non-existent in the new pail line. Impact forming is used throughout. This is accomplished either on punch presses, or with metal swaging equipment built to specifications. Some of these machines require an operator; others are entirely automatic and actuated by contact switches. Where one machine cannot keep up with average production speed, two or more are used, dependent upon their individual output. This results in well balanced production all along the line, preventing a pile-up of work in one place while other segments of the line stand waiting.

6. *A pail body leaving the roll-former and being automatically seam welded at the same time. Maximum production rate of this machine is 1500 pail bodies an hour. This sets the pace for the remainder of production line. In a little over two minutes after this operation, the pail will be ready for shipment.*



7. *After roll forming and welding, the pail bodies pass onward to this press where the top edge is knurled to give the body additional rigidity, and to provide a "seat" for the pail cover.*



4. *This foldable conveyor portion, when dropped down, spans the space between the lithograph machines and the roller coater. Thus sheet stock that is being lithographed can be fed directly through the raised rolls on the roller coater and on into the wickets of the drying oven.*

5. *Here the sheets leave the conveyor and enter the roll-forming machine which automatically forms the body for an industrial pail. This machine also holds the pail body while it is being welded.*

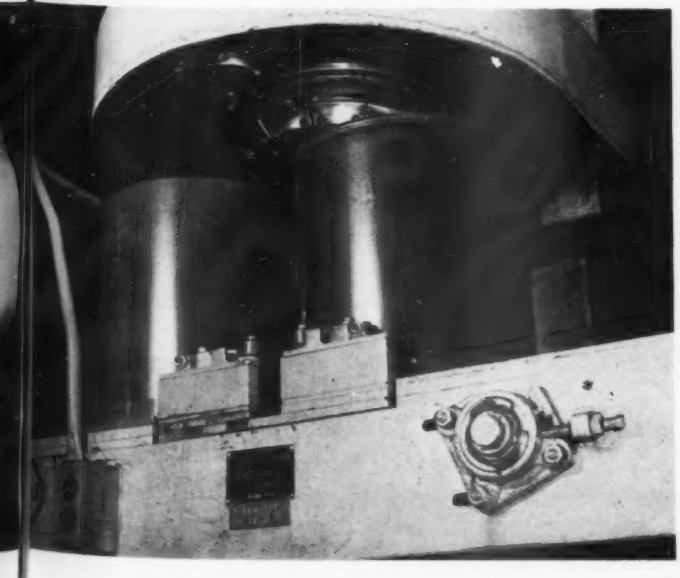
Straight-line production line layout was used, extending from one extremity of factory space to the other. The only auxiliary line, the one used to produce pail tops and bottoms, feeds into the main line at a point where these items are installed. Off-shoot operations are kept at a minimum. Inspection, testing and touch-up work is integral with main production line operations.

The sheet metal used in pail body construction is received in bundle form, already cleaned and ready to paint. This material is 24- or 26-gauge cold rolled steel, furnished in 35 5/16-inch by 70-inch sheet size. Each sheet, after shearing, produces five pail bodies without waste.

Steel finishing prior to fabrication

All material for the pail bodies, bottoms and tops, is painted prior to production. Solid colors are applied by roller coating the entire sheet just as it is received and before it is sheared. When the interior of the

8. *This machine "necks down" one end of the pail so that pails can be stacked one on the other, and also flanges the body to facilitate bottom installation.*



9. *Here another machine, located below conveyor level to make it convenient to place the pails over it as they pass along the line, is used to swage an additional stiffening ring around the top of the pail just under the knurled brim.*

NEW PROTECTIVE COATING CHEMICAL FOR ALUMINUM

ALODIZING

Alodizing with "Alodine,"* a new technique in the protective coating of aluminum, was made available for production-scale use in 1946. Since that time Alodizing has largely supplanted the more elaborate, costly and time-consuming anodic treatments in the aircraft and other industries.

Continuous and successful industrial use has clearly demonstrated the simplicity and economy of the Alodizing process as well as the effectiveness of the "Alodine" amorphous coatings, particularly as a base for paint. In fact, the paint-bond that Alodized aluminum provides has been found to be superior to that possible with chromic acid anodizing.

The corrosion-resistance of unpainted aluminum Alodized with "Alodine" Nos. 100 or 300 is excellent, easily meeting the requirements of Specification MIL-C-5541. However, a need for protection of unpainted aluminum, even better than that obtained with chromic acid anodizing, has long been recognized.

NEW IMPROVED "ALODINE" DEVELOPED By ACP RESEARCH CHEMISTS

Several years of intensive research have now led to a new type of "Alodine," designated as "Alodine" No. 1200. This new protective coating chemical forms an amorphous mixed metallic oxide coating of low dielectric resistance that provides unusually high corrosion-resistance for unpainted aluminum. In addition, it forms an excellent paint bond that approaches closely the high quality obtained with the earlier types of "Alodine."

After having been tested for conformance with Specification MIL-C-5541, "Alodine" No. 1200 is now about to go into production.

PROCESS DETAILS

"Alodine" No. 1200 is the only essential chemical needed to prepare the coating bath and the final rinse bath. One of its unique features is that it can be used in tanks in an immersion process, or, in a multi-stage power washer in a spray process, or, with a slight adjustment of pH, with brush or portable spray equipment in a manual process. This means that even where the simple production equipment is not available, or where touching up of damaged coatings previously Alodized or anodized is required, excellent protection and paint bonding can still be obtained with practically no equipment.

All three methods of application easily meet the requirements of Specification MIL-C-5541.

Process sequence for all three methods of application is the same as for other standard grades of "Alodine" such as Nos. 100, 300, and 600, viz.: 1. Pre-cleaning. 2. Rinsing. 3. Alodizing. 4. Rinsing. 5. Acidulated rinsing. 6. Drying.

Coating time in an immersion process ranges from 2 to 8 minutes and in a mechanized spray process is about 30 seconds. "Alodine" No. 1200 baths are operated at room temperatures (70° to 100°F.) and heating is required only if the bath has gotten cold after a "down" period.

RECOMMENDED USES FOR "ALODINE" No. 1200

"Alodine" No. 1200 is specifically recommended for coating wrought products that are not to be painted or are to be only partially painted; and for coating casting and forging alloys whether or not these are to be painted. "Alodine" Nos. 100 and 300 are still recommended for coating wrought products such as venetian blind slats, awnings, etc., that are invariably painted.

RESULTS OF TENSILE TESTS

This new "Alodine" not only retards visible corrosion and pitting, but as shown in the table below, the loss of ductility with "Alodine" No. 1200, both brush and dip, after 1000 hours salt spray was less than for chromic acid anodizing after 250 hours, and for "Alodine" No. 100 and a conventional chromate treatment after 168 hours exposure.

PROCESS	SALT SPRAY EXPOSURE	COMPLIANCE WITH TENSILE REQUIREMENTS OF MIL-C-5541
CHROMIC ACID ANODIZING	168 hrs.	passes
	250 hrs.	passes
	500 hrs.	fails
	1000 hrs.	fails
BRUSH "ALODINE" No. 1200	168 hrs.	passes
	250 hrs.	passes
	500 hrs.	passes
	1000 hrs.	passes
DIP "ALODINE" No. 1200	168 hrs.	passes
	250 hrs.	passes
	500 hrs.	passes
	1000 hrs.	passes
DIP "ALODINE" No. 100	168 hrs.	passes
	250 hrs.	fails
	500 hrs.	fails
	1000 hrs.	fails
CONVENTIONAL CHROMATE TREATMENT	168 hrs.	passes
	250 hrs.	fails
	500 hrs.	fails
	1000 hrs.	fails

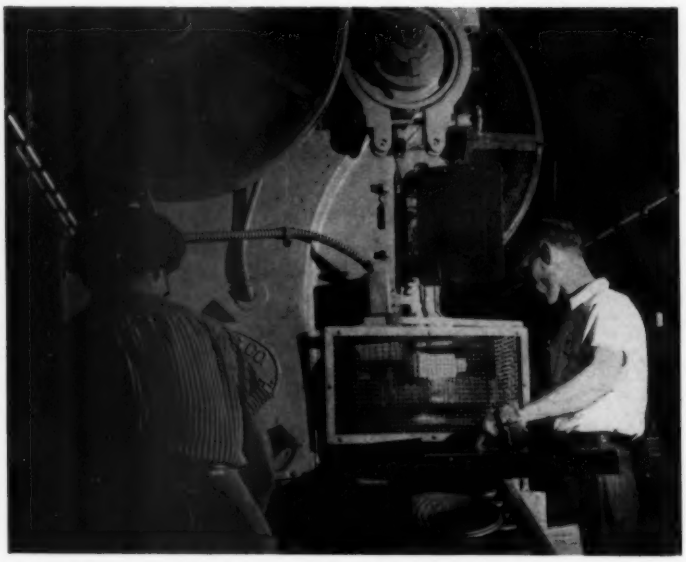
"Alodine" Trade Mark Reg. U. S. Pat. Off.

CHEMICALS ACP PROCESSES

AMERICAN CHEMICAL PAINT COMPANY

General Offices: Ambler, Penna.

Detroit, Michigan **Niles, California** **Windsor, Ontario**



10. *At this point on main pail line, the bottoms enter and are installed on the pail by a double-seaming operation. Here a large press punches out pail bottoms in rapid sequence. Covers are produced by a similar press operation.*

11. *Punching and crimping the hole for the flanged pouring ring. Just beyond this press, the flanged pouring rings are loosely installed. The next press operation crimps them firmly in place.*

pail will require a protective clear lacquer finish to prevent metal contamination of the contents, it is "Rheemcoated" (a patented Rheem process) by roller coating while still in the full sheet size.

Printed message on exterior

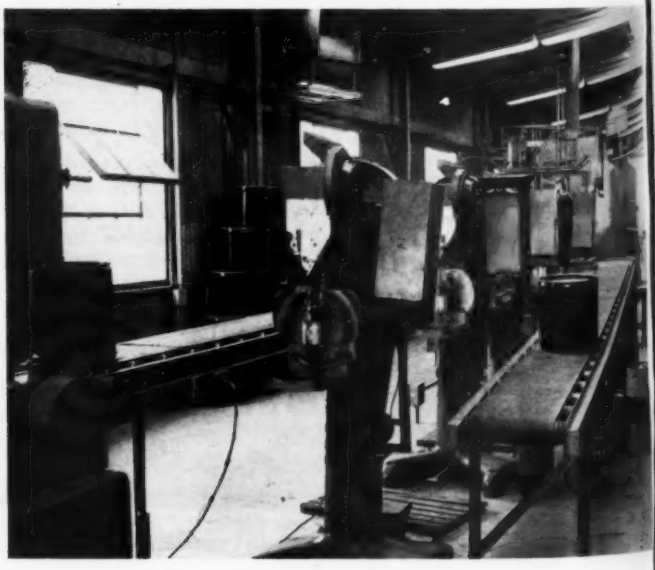
Most of the pails require a printed message of some sort on the exterior of the body section, and this message is applied by lithographing the full size sheet after it is roller coated with the required solid color. To accomplish this, five of the required messages are lithographed on each sheet and so spaced that the message will be properly centered on each pail body after the sheet is sheared into five sections.

Roller coater, lithographing equipment and drying oven form a unified set-up

The roller coater, lithographing equipment and drying oven form a unified set-up, used by Rheem to

14. *Here the flange that holds the wire cover bail (used on special orders only) is being spotwelded in place. This is one of the very few "offshoot" operations along the entire production line.*

15. *After pail bottoms are double-seamed in place, the pails continue onward to this series of four riveting machines where holders for the pail bails are riveted in place. The riveters select a pail from the main conveyor at the left, rivet the bail holder in place, then set the pails on conveyor on right feeding to main conveyor.*



12. *Here pail bottoms are automatically clamped on a centering mandrel, then revolve while a stationary nozzle feeds latex compound into the groove. This compound solidifies and acts as a gasket after the double-seaming operation which installs the pail bodies.*

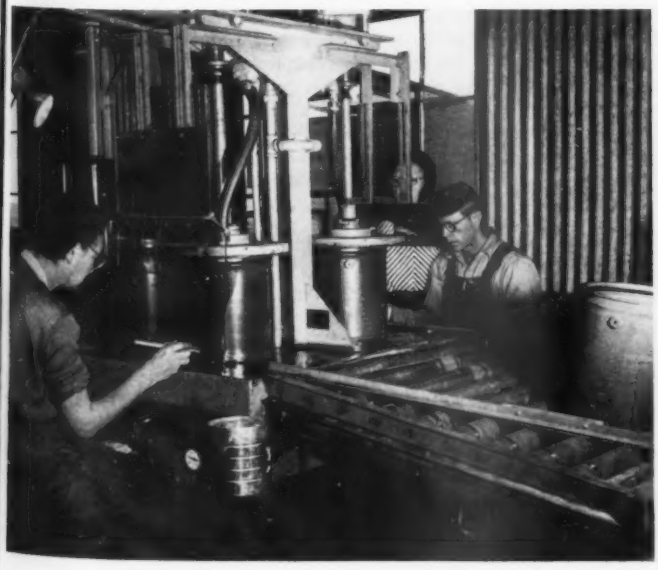
13. *Man at left places cover in one of four holders in four-position machine. The table then turns and indexes the cover under a nozzle that feeds rubber cement into the groove. In third position man at right installs gasket. In fourth position, automatic tool descends and presses the gasket firmly into place.*

paint and lithograph the sheet material for other products, long before the pail line was installed. Its outstanding feature is that it furnishes flat sheet material, that is already painted, to the production lines, lithographed, and ready to go, with only a minimum of final finishing work along weld seams, etc., after the product is manufactured.

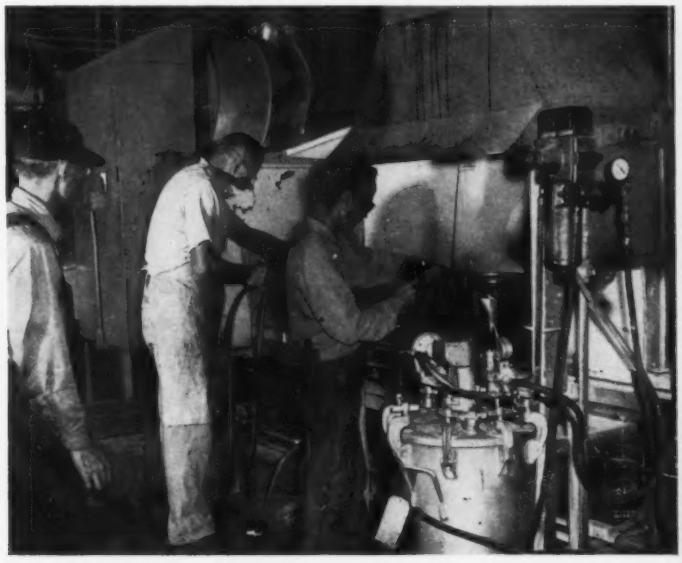
Perhaps the outstanding feature of the main pail production line is the overall efficiency with which sheet metal is wrought to required contours and form with a minimum of employee effort. This facet should be of sharp interest to any company engaged in production with sheet metals. While it is true that the Rheem pail line has been unified in the interest of producing a single product, many techniques, or combinations of techniques, used along the line, would serve very effectively if set apart in other types of production work.

---

16. *Pails being soap-tested for leakage. The double-seamed bottom of the pail is below the surface of the soap solution; the gasketed covers (a part of testing machine) clamp downward to seal the top, then air at from 5 to 7 psi is admitted. Soap is brushed over seams and rivets.*

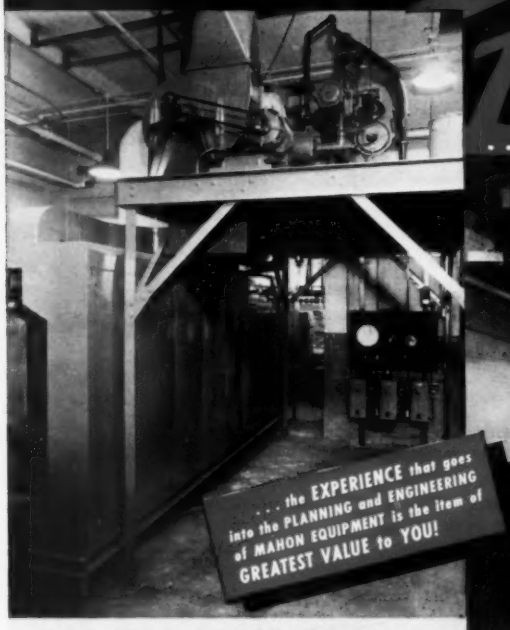


17. *After soap test, pails pass into 20-ft. drying oven operated at about 300° F. Here all moisture is eliminated prior to final finishing. As pails emerge from oven, they enter paint booths where exterior weld seam receives a coat of paint to match the body color.*



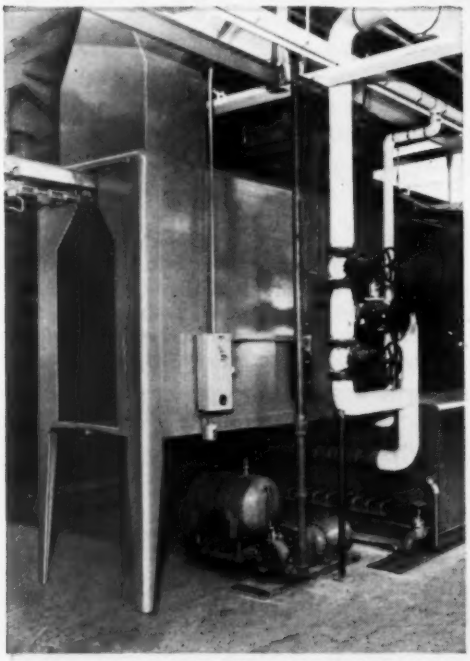
COMPLETE *Finishing* SYSTEMS

. . . for ENAMELS • LACQUER • PAINT • VARNISH



Mahon Low Temperature Finish Drying Oven at American-Standard. View shows Heating, Recirculating and Exhaust Equipment as well as the Control Cabinet Housing Temperature Controls, Recording Instruments and Safety Devices.

View of One of Two Complete Mahon Finishing Systems Installed in the Buffalo Stamping Plant of American-Standard. Metal Cleaning and Rust Proofing Machine and Dry-Off Oven are in the Foreground.



Exit End of Mahon Metal Cleaning and Rust Proofing Machine at American-Standard. Processing Solutions are Heated by Steam. Temperature Control is Automatic.

HEATER PANELS at AMERICAN STANDARD are also FINISHED in MAHON EQUIPMENT!

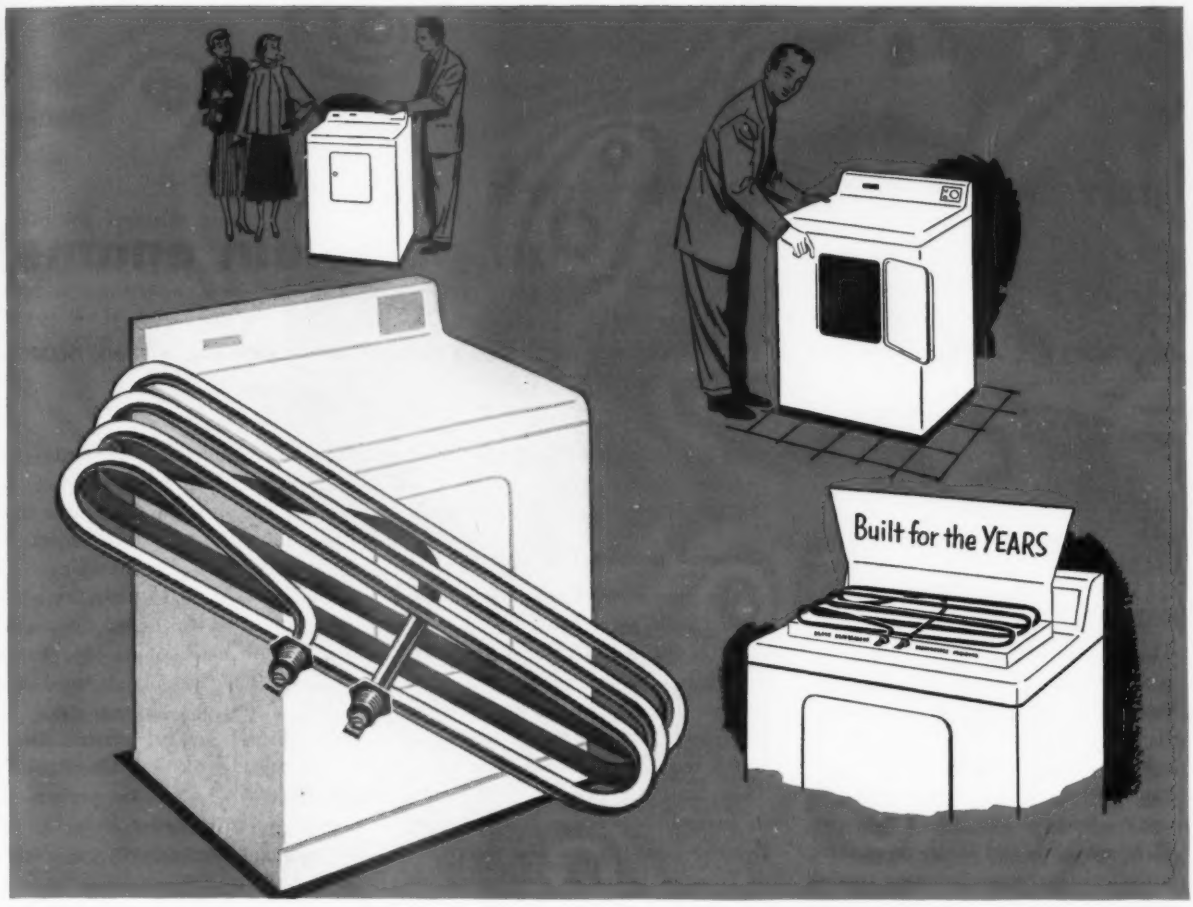
Major elements of a second Complete Mahon Finishing System installed in the Buffalo Stamping Plant of American-Standard are illustrated here. This second system, like the other, is ultramodern in every respect. Parts are carried on a single conveyor which passes through a five-stage Metal Cleaning and Rust Proofing Machine, a Dry-Off Oven, a Cooling Tunnel, two Conventional Type Hydro-Filter Spray Booths which are staggered right and left hand, for spraying opposite sides, and finally through a Low Temperature Finish Drying Oven. This is another typical Mahon Finishing System designed to do a specific job efficiently and economically. If you have a finishing problem, or are contemplating new finishing equipment, you will find that Mahon engineers are better qualified to advise you on both methods and equipment requirements . . . better qualified to do the all-important planning, coordinating and engineering of equipment—which is the key to fine finishes at minimum cost. And, you will also find that Mahon equipment is built better for more economical operation over a longer period of time. Mahon's background history in this highly specialized field covers thousands of Complete Finishing Systems including Dip, Flow Coating and Spray Equipment for every conceivable product painted on a production basis. See Mahon's Insert in Sweet's Plant Engineering File, or write for Catalog A-654.

THE R. C. MAHON COMPANY

HOME OFFICE and PLANT, Detroit 34, Mich. • WESTERN SALES DIVISION, Chicago 4, Ill.

Engineers and Manufacturers of Complete Finishing Systems—including Metal Cleaning, Pickling, and Rust Proofing Equipment, Hydro-Filter Spray Booths, Dip and Flow Coaters, Filtered Air Supply Systems, and Drying and Baking Ovens, Cooling Tunnels. Heat Treating and Quenching Equipment for Aluminum and Magnesium, and other units of Special Production Equipment.

MAHON



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equip with TK® Rod-type heating units

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Your dealers (and *their* customers, too) will sense the extra value at a glance. Ruggedly built, compact, free from the hazards of lint, moisture and corrosion, TK Rod-type units provide the ultimate in electric heating. Best of all, they will last longer, *years longer*—an important point when householders are investing hundreds of dollars in an appliance.

TK Units for DISHWASHERS, Too!

Sturdily built for long service, quickly responsive in operation, *TK Immersion Units* help sell your product . . . help to keep it sold thereafter. Write today for further details, also for any help you may need in designing the heating element.

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Infra-red drying at work on porcelain enamel

by F. O. Mahery, Jr. • SECRETARY-TREASURER, ATHENS STOVE WORKS, INC., ATHENS, GEORGIA

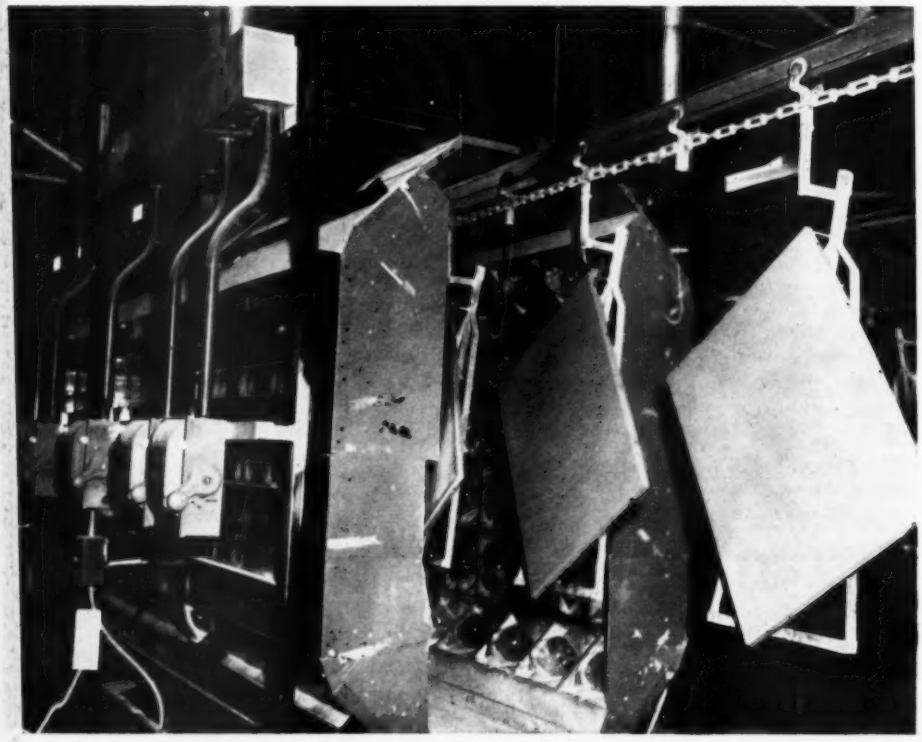
Exclusive feature finish

The selection of any new manufacturing process, however promising, often imposes some factors to discourage its adoption. This is especially true when such consideration is associated with the construction of an entirely new plant. However, the decision is not so difficult to make when existing processes have serious shortcomings. Numerous conferences and discussions with plant managers and engineers of presently existing manufacturing plants indicated that the conventional systems left much to be desired in their process of drying the water from wet porcelain enamel sprayed pieces.

Common problems in drying

The major problems to be contended with, as reported by the operators in the field, included excessive drying time which, in terms of high-volume production, reflected itself in extremely long conveyorized units which required excessive floor space. Then, too, one heard of difficulty in maintaining temperature control. Relative humidity was also mentioned as being a factor in developing undesirable bisque strength characteristics and requiring either excessive brushing time and equipment or, in the opposite direction, a bisque that was unduly tender and subject to process defects due to handling.

Changes of relative humidity within the dryer also affected the condition of the material prior to firing and, to some extent, dictated the speed with which drying could be accomplished or, in extreme cases, dictated that reduced production had to be accepted for those periods of time when the relative humidity of the ambient atmosphere was excessively high.



There was a universal complaint of loss of production time due to the length of time required to bring the dryers up to operating temperature or, where they were put into operation prematurely, the condition of the product varied throughout the day. The more conventional type dryers required elaborate baffling and heat transfer systems. The heat transfer systems usually presented the hazard of contamination by dust, scale and other forms of foreign matter. Where gaseous fuels were used, the products of combustion created a secondary problem if they were not properly evacuated and maintained at relatively low percentage, as these products of combustion could contain injurious gases which adversely affected the finish of the fired product, producing such defects as scum or rough and sandy texture. Such a formidable series of problems, with which the more competent enamelers in the field were conversant, indicated the strong desirability of an alternative method which would be

Photo on opposite page shows vertical type unit for drying ground coat, while photo on right shows horizontal unit for drying cover coat.

more in keeping with the operations and equipment under consideration for a new plant designed to produce the maximum of quality.

Infra-red offered apparent advantages

The only system which seemed to offer relative freedom from the deterrents as outlined appeared to be infra-red drying. This system appeared to offer all of the advantages of clean drying with few or none of the drawbacks. The system was instant-starting, requiring no warm-up time, as the articles to be dried would reach normal operating temperature at the outgoing end of the dryer, irrespective of whether or not the heat had been on prior to its entry. Engineering tests indicated that drying time would be very rapid — considerably shorter than by other conventional methods. Temperature control appeared to be no problem, nor did relative humidity. The system was free of dust sources as well as contaminating gases (the product of combustion). The elimination of these major problems presented an ideal atmosphere for the drying of the ceramic product. The theory of infra-red drying offered a "mechanics of drying" that was appealing — that is, drying from the metal base "out" instead of surface drying first. Introducing the heat to the porcelain at its base provides a temperature gradient which causes the water to rise to the surface and be evaporated more uniformly, thus giving a more desirable bisque property.

Accordingly, a manufacturer of infra-red drying systems was contacted and negotiated with to develop and engineer a drying system to fulfill the requirements and production needs of our shop. An extensive series of tests were conducted to develop the engineering data required. From this data a drying oven was designed which embodied the latest advances in both infra-red lamp and reflector design as well as careful engineering to render the greatest heat efficiency.

In the course of design calculations it became evident that neither the heavy monorail support drive mechanism nor chain conveyors were required by virtue of the construction of the unit itself. Accordingly, a unit was employed of considerably lighter construction than is normally considered satisfactory in the porcelain enameling field.

Incorporated in the system was a series of blowers to evacuate the water vapor driven from the ware in the process of drying, and thus maintain conditions of relative humidity desired.

The unit as finally designed, approved, and installed, consists of a ground coat dryer of the vertical type, having a double bank of lights on either side of the monorail conveyor and shaped in a broad "U" to deliver heat to both sides of ground coated ware after it had been dipped and hung on the conveyor. The ground coat unit is 14′-8″ long and designed to operate with the conveyor traveling at speeds up to 10 to 30 feet per minute. The source of heat is a bank of infra-red lamps, each consuming 1000 watts, with the total heat requirement for this dryer of 192 k.w.

The cover coat dryer is a single horizontal "U-type," designed and placed above a conventional pin-type conveyor located at the outgoing end of an automatic spray machine. The unit is 14′-8″ long and designed to dry the material passing through it at the rate of 10 to 20 feet per minute, using 96 — 1000 watt lamps.

The units have functioned since their installation in a most satisfactory manner, operating satisfactorily over long periods of time and having the attributes mentioned earlier. No major difficulties have been encountered and no design changes have been required.

Lamp life has been satisfactory, power costs have been moderate, and in view of the freedom from those defects universally suffered as a consequence of dirt contamination and gases, the unit is considered a valuable part of our finishing system.

It's Almost Christmas

Time to think of seeing old friends
and dear relations . . . of planning gifts to delight
the children . . . of sharing
our good fortune with others.
Time to review a whole year gone by, and time
to plan another — with earnest wishes
for more peace, more brotherhood . . . everywhere.
May you have a very Merry Christmas
and a Happy New Year.

PEMCO CORPORATION—

for surfaces that need repeated cleanings

Furious scrubbing—that's the treatment this grimy surface will get. Mother will scour his face until it shines again. And she'll do the same to the titania porcelain enameled surfaces in the kitchen.

TITANOX-TG non-pigmentary titanium dioxide is specially processed for these enamels. The controlled chemical and physical properties of TITANOX-TG speed production and lower costs. For the often desired delicate blue-white tints, TITANOX-TG-400 is constant and uniform in bluing effect.

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new weapons for fighting . . . .

article I (October, 1953)

Silicone finishes for high temperature applications.

article II (November, 1953)

High temperature ceramic coatings and their application.

article III (December, 1953)

Cermet coatings—possible answer to ultra-high temperature problems

Research has accomplished much

When we see a modern appliance on the sales floor or in the home, or a coin-operated machine, a piece of metal furniture, a cabinet, a bathtub, or even a metal casket, we are prone to think of the finish (if we think of it at all) as a means of beautifying the exterior for use and for salability.

There is another factor of at least equal importance in the relationship of a "finish" to the metal product — its qualities for resisting corrosion and, in many cases, heat as well. There can be no more important feature of *any* metal product than its finish — the feature that people *see*. That's why manufacturers, from president to the man in the shop, learn to respect the importance of the finishing department.

During recent years there has been a great deal of research in all types of coatings for the specific purpose of developing greater HEAT and CORROSION resistance for both conventional and specialized products, and for both commercial and industrial applications.

Important advances have been made, particularly in the fields of industrial organic and ceramic type coatings.

f i n i s h has reported these developments as progress is shown. This issue completes a series of three articles pointing up this progress in the continuing effort to master the harmful effects resulting from extreme conditions of heat and/or corrosion. We welcome reader comment or suggestions for the development of later editorial material on the subject.

A ceramic coated Ryan exhaust system for a Pratt & Whitney 3500 hp engine is examined by Wm. Cockrell (left), director of Ryan development laboratories, and T. C. Hacker, engineer.

Cermets—possible answer to ultra-high temperatures

by Alexander Pechman • CERAMIC ENGINEER, DEVELOPMENT LABORATORIES, RYAN AERONAUTICAL CO., SAN DIEGO, CALIFORNIA

THE Ryan Aeronautical Company was one of the first companies to use high temperature ceramic coatings successfully and to demonstrate their effectiveness in comprehensive flight tests. Arranged by Ryan with Boeing Airplane Company and Pan American World Airways, these flight tests were conducted on powerful Pratt and Whitney, 3500 horsepower engines of Boeing Stratocruisers in trans-Pacific runs. Ryan built sets of test exhaust header sections, from a number of alloys, coated and uncoated with ceramics, and subjected these to actual service on the aircraft. At intervals of approximately 500 hours, these headers were removed and examined by the development laboratories. Photomicrographs, spectrograms, microhardness readings and other tests were made of each header before it was returned to further service.

As a result, it was definitely shown that the ceramic coatings tested had substantially extended the life of the exhaust system components by protecting the metal surfaces against oxidation, carbon absorption and corrosion attack. These tests have continued to 3,000 hours of flight.

Also, similar sets of test headers were installed on three other global airlines: United Air Lines, Northwest Airlines and British Overseas Airways Corp., in order to gather data from the use of the same components in Stratocruisers under different operating procedures.

These ceramic coatings permit the use of less critical materials in place of the scarcer alloys. Examples of this use are the inner combustion chambers for jet engines which can

be made from Type 321 stainless steel and ceramic coated rather than from nickel-rich materials.

The ceramic coatings have to be uniform and exceedingly thin to prevent their cracking or flaking off from the surfaces. Average thicknesses run from .001″ to .002″. These coatings have withstood 20 cycles of immediate water quenchings after being heated to 1700° F. without deleterious effects. The thin coatings are an advantage to the weight-conscious aircraft industry, also, because of their lighter weight. They increase the weight of a typical part by less than 2 per cent.

This type of coating undoubtedly has numerous possibilities in other industries. It has potential value in automotive and marine-type exhaust stacks and in industrial applications where high temperatures are utilized.

It is realized that great savings could be achieved in money and scarce metals, if mild steel could be used in place of stainless steels. It should be understood by the designer, however, that mild steel, even if protected by ceramic coating, can not be substituted for more expensive steels in many applications because of structural demands.

At temperatures of 1600° F. and above, low-carbon steels have excessive creep and low tensile strength which render them unfit for these critical ranges. The ceramic coatings, being comparatively thin, do not insulate the base metal from the heat, though they do protect the metal from break-down from oxidation and corrosive vapors at high temperature.

" . . . AND HAVE HAD TO LEAVE MY OFFICE FOR A WEEK TO ATTEND A VERY IMPORTANT MATTER HERE IN THE SOUTH."

Cermets — a wedding of ceramics and metals

Combining ceramic oxides with metals, in order to achieve the desirable physical properties of both, has led to the study of ceramic-metallic bodies, more commonly known as cermets. Ceramic materials, being oxides, are inert to further oxidation at high temperatures, but have poor thermal shock resistance and do not possess ductility. Metals, on the other hand, are ductile and because of high thermal conductivity are capable of releasing stress quickly, to withstand thermal shock. The idea of using ceramics with metals, in order to achieve a combination of physical properties, is not a new one. The reinforcement of concrete with iron rods is a common example.

Cermet bodies, however, are mixtures of the two, united in chemical bond by the use of intermediate compounds such as nitrides, borides, carbides, sulfides and hydrides. Considerable research on cermets has been done over the past few years. A review of literature on the subject provides a generalized picture of the problems and principles involved. The initial difficulty in the study of cermets is the lack of data such as thermal expansion, conductivity, high temperature strengths and corrosion resistance of the nitrides, borides and carbides. High melting point compounds and their use in cermets are being studied at many of the universities and research organizations of the country, as well as 13 governmental agencies and over 50 industrial organizations. Hafnium, tantalum, columbium and titanium carbides have the highest melting points of known compounds.

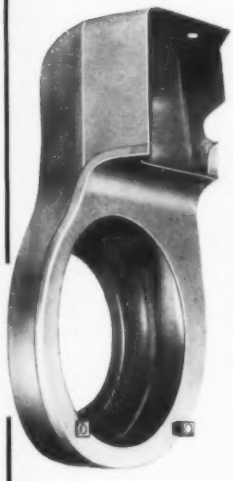
The development of cermet bodies seems to require the components to have a similarity of crystalline structure, similarity of radii of atoms and ions involved and similarity of bond types in order to form the resultant solid solution.

Direct chemical combination of a metal with a ceramic oxide, other than its own, is difficult because of

to Page 86 →

LOOK TO DANIELSON *for a* VARIETY *of* *Quality Products*

Pulsation Chamber. Just one example of a great variety of Danielson precision assemblies.



Air Shroud for air cooled engines. A typical Danielson spot welding assembly on automatic spot welders for low cost and speed production.

Fabricated steel cabinets of all sizes and description.

18 ga. steel one piece draw swivel chair base.

12" rule photographed with chair base to show comparative size.

Pictured here are a few of the many items we produce for satisfied customers. What we cannot picture is the high quality and service Danielson is equipped to give you —— try us!

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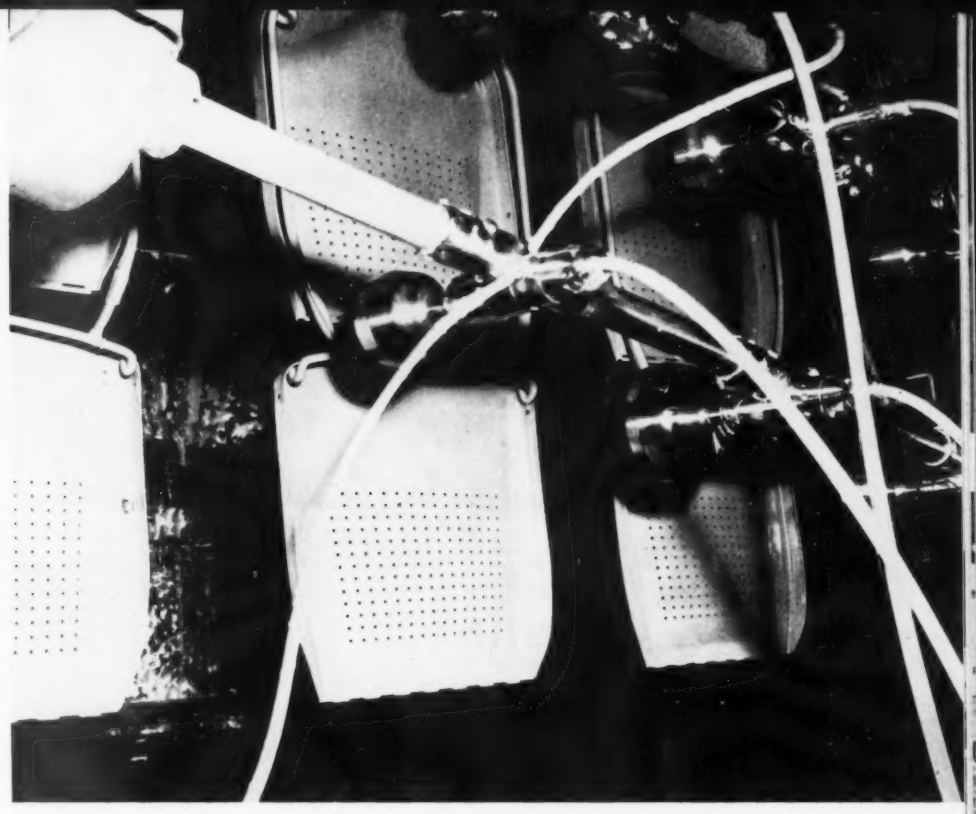

Outdoor chair seats and backs are electrostatically painted at the rate of 1200 parts per hour at Arvin plant.

Electrostatic spraying of chair seats and backs at Arvin Industries

airless electrostatic spraying replaces dipping for metal furniture parts

by Wm. A. Frye • PLANT MANAGER, ARVIN INDUSTRIES, INC., COLUMBUS, INDIANA

finish

Change in product design —specifically, perforating the backs and seats of our outdoor metal chairs with hundreds of tiny holes — was one of the main reasons why Arvin Industries switched from the dip finishing process to the electrostatic spray process.

The chair seats and backs (20 gauge steel, perforated with 195 — 5/32 inch diameter holes) are finished in three colors: aqua, lime and tangerine, with white tubular frames.

In addition to facilitating maintenance of good housekeeping, the electrostatic spray painting gives a more uniform film thickness and better quality of appearance. Now, there is no variance in film thickness from the top to bottom of the painted surface — whereas before, draining after dip gave quite a range in film thickness. Then, too, there's less material in process, for they prepare colors only as needed.

66 minutes from raw steel storage to packaged product

The new production line at Arvin works like clockwork. From the time the raw steel is taken from storage . . . worked through the press line . . . cleaned, painted and baked — only sixty-six minutes elapse until the finished pieces are packed into cartons, ready for shipping.

The conveyor is an overhead monorail, 1400 feet in overall length. One seat and one back are hung, one above the other, on each workholder, spaced on two-foot centers.

Front and back sides of the parts are painted electrostatically at the same time, using a staggered arrangement of four triple-atomizer units — two on each side of the line. Anyone familiar with ordinary painting operations—hand spray or automatic spray guns—is truly amazed to watch this operation. There is no "blast"

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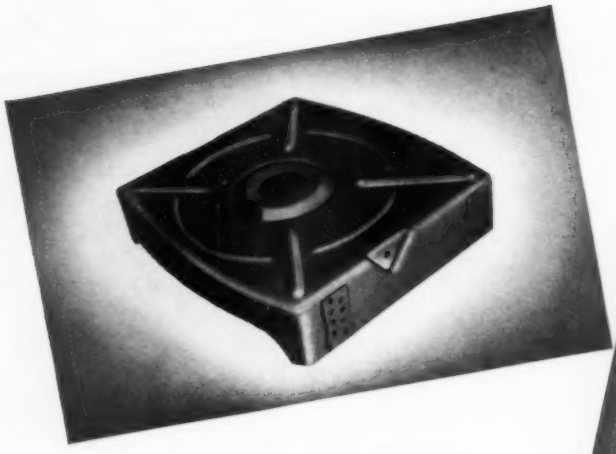

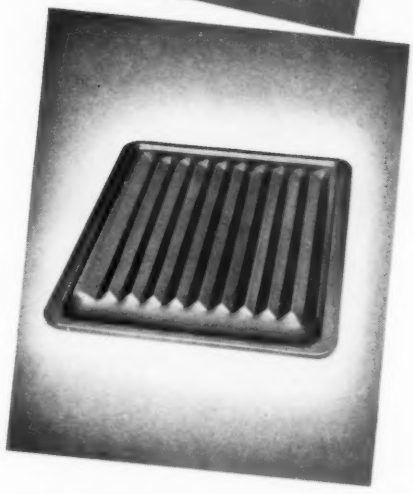

may we assist YOU in developing a new item or improving an old one?

Just a word from you, and our engineering and production planning departments will swing into action devising and figuring how to fill your requirements better, easier, cheaper and faster.

During our 87-year existence we have made sheet metal items of not only carbon steel but also of copper, aluminum, brass, bronze, terne plate and stainless steel.

Latest sheet metal manufacturing know-how in our modern plant goes into every job, assuring you custom-made parts or assemblies at the right price. Make SOUTHER your first source for anything made of sheet metal and $ave.

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NEW Supplies and Equipment

L-10. Samples of small zinc alloy die castings available

New Samples of small zinc alloy die castings are available to appliance and metal product manufacturers who are interested in elimi-

nating assembly and secondary operations on small gears, pinions, and gears in combination with mechanical elements such as cams, hubs, spacers, flanges, etc. Shafts as well as center holes of all shapes can be provided as required. The products illustrated are used in timing devices, clock movements and various other mechanical applications.

More Information

For more information on new supplies, equipment and literature reviewed here, fill out the order form, or write to us on your company stationery.

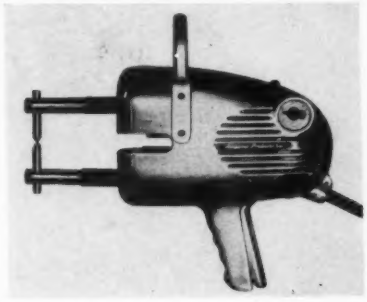
L-12. Wet burnishing process for polishing and buffing

New A revolutionary and completely new method of wet burnishing is designed to improve conventional polishing and buffing procedures. The method provides important savings through the use of revolving rubber mats which operate in a wet abrasive slurry. The parts to be burnished are advanced through the slurry on a carrier moving in a circular or other enclosure.

It is stated that fabric polishing and buffing wheels last only about 15 per cent as long as the rubber-fingered mats used on the new machines. Compounds in the abrasive slurry are re-used over and over with little loss, which further cuts costs through savings in compounds. Also, there is a complete absence of dust, thus reducing fire and health hazards, making elaborate exhaust systems unnecessary.

L-13. Portable spot welder has electronic timing control

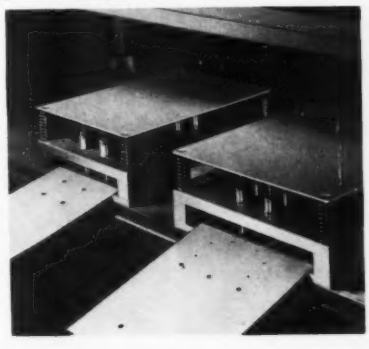
New This new portable spot welder features an electronic timing control enclosed within the unit itself. It offers any timing



cycle from 1/60th second to a full second. Up to 1000 lbs. high electrode pressure can be had by adjustment of tips and with very little hand pressure. It welds most alloys of aluminum sheets, steel, mild and stainless, also galvanized and cadmium plated.

L-14. Multiple hole punching system with unlimited hole punching patterns

New A new multiple hole punching system — with punch retainer plates for unlimited hole punching patterns — provides a sim-

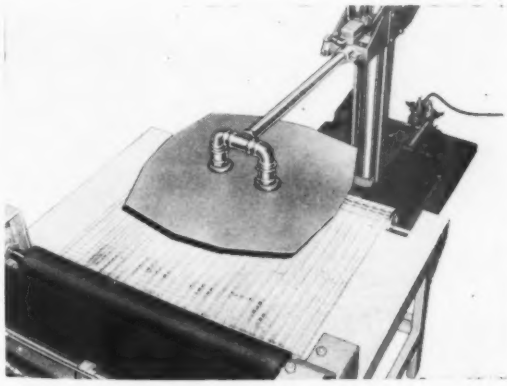


ple, fast, convenient and economical method of punching holes in sheet metal parts by permitting the entire set-up to be made outside the stamping press or press brake.

In addition, punch assemblies and dies are interchangeable, permitting the same parts to be used and re-used

L-11. Vacuum lift for handling non-porous metal sheets

New This new automatic vacuum lift contains its own vacuum plant and is shipped completely assembled, ready to hook into electric power and air lines.



It will handle any non-porous metal sheets up to 40″ x 40″; will handle from one to six sheets per minute. This machine will pick up at any level from floor to 36″ height and is adjustable through 180° turn so as to be able to lay the sheet exactly into position in any repetitive operation. The per cycle air consumption is approximately 60 cubic feet.

The pushbutton control can be put on a separate unit handy to the operator. An automatic cycle can also be provided.

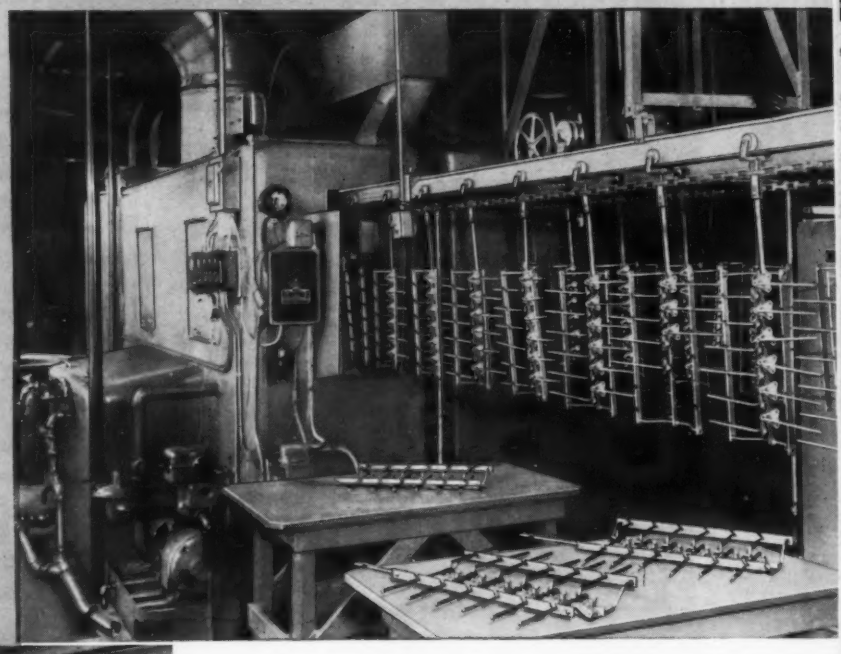
completely finished . . . .

. . . . 1000 PARTS PER HOUR

in space 16 ft. x 40 ft.

OPERATIONS

1. Washing
2. Rinsing
3. Hot Air Blowoff & Dry
4. Paint Spray
5. Paint Bake

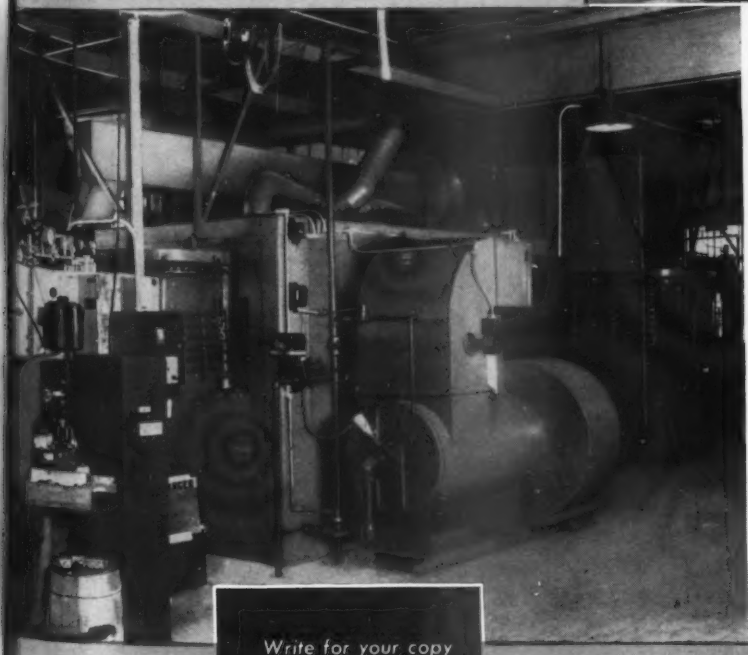


ENGINEERED BY

Cincinnati

CLEANING AND FINISHING MACHINERY CO.

...at The George R. Carter Co., Detroit, Mich.



▲ **Washing, Rinsing and Hot Air Blowoff**

◀ **Finished Product Emerging from Oven**

Unusually compact, this CINCINNATI-engineered small parts finishing system has proved to be a major improvement in The George R. Carter Company's production facilities. Complete finishing operations on automobile trim hardware, parts are performed efficiently and quickly.

With a minimum of adaptation this Cincinnati system can handle a large variety of small parts. Representative installations have shown savings up to 75% in time and cost.

Write for your copy of the latest CINCINNATI catalog today!

Cincinnati | **CLEANING & FINISHING MACHINERY CO., INC.**

2004 HAGEMAN STREET, SHARONVILLE, OHIO

in an infinite number of set-ups. Photo shows multiple hole punching assemblies in a press brake, with punched work in the foreground.

L-15. Positive grip "tip wrench" for difficult assembly operations

New A new hand tool, known as a "tip wrench" is designed to hold nuts, bolts and screws (where fingers can't easily hold them), and tighten or loosen them in hard-to-get-at places in assembly operations, or in maintenance and repair work. The new tool is an adjustable socket pocket-wrench that is a combination self-adjusting socket wrench and screw driver.

It grips, starts, tightens (or loosens) with just one setting. By thumb pressure on plunger head, the jaws slide out and open, the nut, bolt or screw is inserted, gripped firmly, and as pressure is released the user is ready to go in and complete the job. Its capacity ranges from a No. 2 to No. 12 nut or screw.

L-16. Phosphate-coated test panels offered users

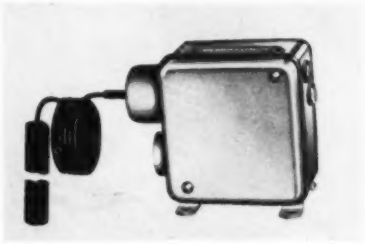
New A manufacturer of a complete line of phosphate coatings offers laboratory coated test panels to interested manufacturers for testing under plant conditions.

L-17. Automatic control for all inert gas welding

New The function of a new automatic control for all inert gas welding is to limit the flow duration of both gas and water to the necessary welding and cooling periods. Automatic shut-off then overcomes human forgetfulness and resulting waste of gas and water. The control, known as Gastrol, works equally well with a.c. or d.c. welders, and is operated on standard 110 volt a.c. power.

L-18. New cooling tower control for mechanical cooling systems

New A new cooling tower control is designed for commercial refrigeration and air conditioning service to control evaporative



condensers and cooling towers. Temperature range of the control is 50° F. to 90° F., with a minimum differential of four degrees.

When wired in series with the cooling tower fan motor or motor controller, the control assures proper operation by stopping the fan when the water temperature falls below the control setting. It may also be used to control the circulating pump where no fan is used.

L-19. Micro press control increases output, safety

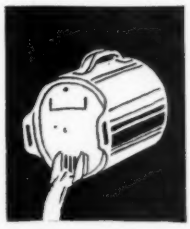
New A two-hand clutch control, called the "Micro Trip", is said to increase production up to 25 per cent for manually operated power machines. It affords complete protection for operators and set-up men.

Installation of the device on existing presses is said to usually result in a 10 to 25 per cent gain in production. It has instantaneous electrical response, and a light touch actuation that reduces operator fatigue.

The control device prevents tying down or cheating because its two control switches must be pressed simultaneously to operate the press.

L-20. Laboratory mill jars with easy pouring lid

New This line of metal covered laboratory mill jars are said to be unbreakable in normal routine use. The jars have discharge covers with easy pouring lids, making it possible to pour the batch while retaining the ball charge.



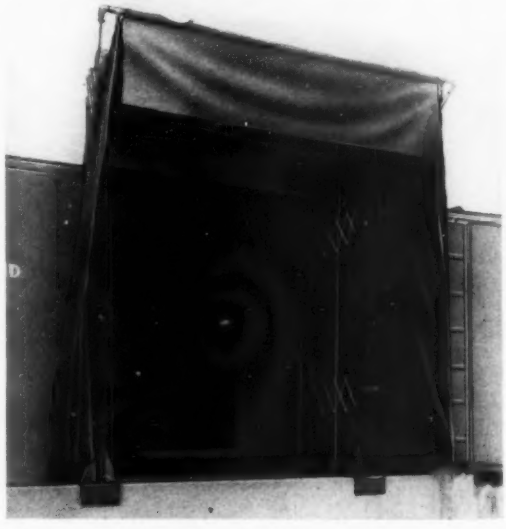
Other features of the porcelain lined jars include live soft rubber gasket with close-fitting cover that may be tightened by hand — jar and cover are surface ground after firing to make absolute fit.

L-21. Dock shelter provides protection in unloading operations

New This new model shelter is for use where no loading dock is available. The model is mounted on a concrete abutment, and provides complete protection to men and materials when unloading from a boxcar into a truck or vice versa.

The shelter was designed for efficient, assembly-line operation, yet permits "individual engineering" to get specific conditions of installation.

The model is a combination of standard "scissor" and "outrigger" dock shelters. The scissor part extends into the boxcar where it is fastened securely. The outrigger fits snugly around the truck.



New Industrial Literature

121. Catalog lists 33 products for metal processing, finishing

New This new catalog, for the use of metal processors and finishers, will aid in selecting correct chemicals for various operations. The catalog lists 33 standard Klem products and contains a comprehensive application chart for surface preparation of ferrous and nonferrous metals.

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122. A new 112-page die manual

New Just off the press is this enlarged "silver anniversary" edition of the Verson Die Manual. The manual contains 112 pages

devoted to a pictorial presentation of press brake dies and special tooling, along with detailed text and tables on how to select dies for specific jobs, tonnages required, etc. The manual shows over 200 sets of dies.

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123. "Complete Finishing Systems"

New This new catalog on "Complete Finishing Systems" illustrates and describes a wide variety of finishing systems and equipment. Both integral (self-contained) systems and unitized types are covered. Examples shown cover small and large parts.

Processes outlined include: pretreatment — acid, alkali or solvent cleaning; paint applications — by spray, dip or flow; drying — using gas, steam, oil or electric heat and make-up air — replacing plant air exhausted by the three previous operations.

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124. "Spray Painting Made Easy"

New This new book covers the spray painting subject from selection of equipment to tips for spray painters. There are chapters on job set-ups and how to finish various items which lend themselves to spray finishing. The book costs 35¢.

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125. Benefits of metallizing

New This illustrated folder contains applications of, uses for, and benefits to be obtained with metallizing. It contains a description of the process itself, as well as important data on a new spraying technique which saves considerable time and permits work on jobs that could not be done before.

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126. Quality control through use of radiography

New A new brochure on nondestructive testing is entitled "Quality Control through Radiography". Profusely illustrated with actual case-history photos demonstrating the applications of radiographic testing, it is designed as a primer for all those not yet familiar with radiography as a non-destructive testing tool, as well as a "capsule" review for those already using radiography in quality control work.

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127. Catalog on Ti-Namel

New This new illustrated catalog Ti-Namel presents many facts about a titanium killed steel developed expressly for porcelain enameling.

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128. Lithoform—phosphate coating for zinc or cadmium surfaces

New This descriptive folder gives information on "Lithoform", a liquid zinc phosphate coating chemical which forms a durable bond on zinc or cadmium surfaces, prior to painting. It is stated that the product meets government specifications.

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129. "Soft metal" deburring

New Maizo blast machines for the production deburring of a variety of "soft metal" parts are described in a new bulletin. One production model is a continuous operating machine with a ferris-wheel type fixture for holding small parts made of aluminum and other soft metals. Its normal production rate is 192 to 288 pieces per hour.

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130. Metal appliance mouldings

New This new book, entitled "Plan Book of Metal Mouldings," contains data on hundreds of standard and special mouldings which can be used by appliance and other finished metal product manufacturers to enhance the beauty of their products.

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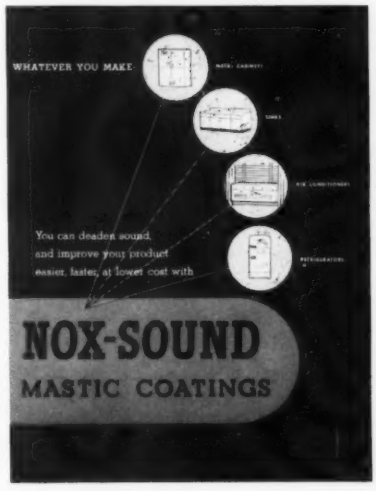
131. Sound-deadener for appliances insulates, waterproofs, rustproofs

New Detailed information on how fabricated sheet metal products can be improved through application of a Nox-Sound mastic



coating is contained in a new pamphlet which explains just why and how the mastic coating eliminates "tinniness" from a product. Just one application of the coating not only deadens sound, but insulates, waterproofs and rustproofs.

132. Pre-finished metals for use in modern design of home appliances

New Of special interest to product designers is this 8-page brochure on "Pre-finished Metals for Modern Design" in appliances and other products for the home. Photos show use of pre-finished metals serving both ornamental and utilitarian purposes on such products as kitchen ranges, radiant heaters, commercial griddles, timers, kitchen ware, etc.

The prefinished metals are furnished with plane, crimped, or striped surfaces, and with metallic, organic, or polished finishes. They are also available in sheets, strips or coils.

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133. "Success stories" on the use of tissues in packaging products

New Titled "Industry Turns to Tissues," this 16-page folder sums up unusual "success stories" of industrial uses for tissues. The

folder points out countless applications for various types of tissues in the manufacture of products and product packaging materials — and in the wrapping and packaging of products of all kinds.

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134. Three full-color bulletins describe new Tri-Clad motors

New A recently announced line of Tri-Clad "55" motors, built in 1-30 hp ratings to latest NEMA dimensions, are described in three new four-color picture-story bulletins.

A 16-page booklet covers drip-proof models; enclosed motors are presented in an 8-pager; and a 14-page bulletin describes new gear motors.

The publications contain complete descriptions of new maintenance, performance, and protective features of the line, and each includes a double-spread cutaway drawing of the motors.

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135. Porcelain enameling operations

New A new 106-page booklet, entitled "Porcelain Enameling Operations," and authored by E. E. Bryant, is complete from the subject of the manufacture of porcelain enamel frit to efficient plant operations, furnace maintenance, plant layout, etc. Further information on price and availability of the book may be obtained by writing to *finish* or direct to The Enamelist Publishing Co., 4152 E. 56th St., Cleveland 5, Ohio.

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136. "An Introduction to Clad Metals"

New This pocket-size book, said to be the first publication to cover this important field, offers a comprehensive survey of the manufacture and applications of the stainless-, copper-, brass-, and other clad steels produced by steel companies.

Some of the applications mentioned include: evaporators, heat exchangers, heaters, cookers, ovens, table tops, mouldings, and domestic and industrial cooking utensils.

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137. "Ultrasonic Cleaning for Industry"

New This two-color, four-page publication explains how the action of an ultrasonic generator hastens cleaning by as much as 100 times. Photos and drawings show components of the equipment and the generator in use.

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138. Revised book on cut-off wheels

New A complete revision of this 36-page pocket-size "cut-off wheels" book gives information on various types of cutting-off machines and abrasive cut-off wheels, their selection, application and proper usage; also photos of typical operations, and helpful tables for wheel selection and conversion of wheel speeds to feet per minute values.

139. Jig and fixture components

New This folder described an expanded line of over 500 jig and fixture components. Among the many items illustrated are blank

jaws, sine fixture keys, tee slot nuts and bolts, shoulder and thumb screws, hand wheels, rest buttons, quarter turn screws, studs, flange nuts; plastic galls, hand knobs, clamping levers, etc.

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140. Automatic photometric unit

New This data sheet describes a new automatic photometric unit which, when used with the proper exposure head, can measure such variables as reflectance, opacity, hiding power, detergency, tristimulus colorimetry, gloss luminous transmittance, haze and other optical qualities.

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141. "Facts about Silicon Carbide"

New This 52-page brochure discloses the properties and many applications of silicone carbide, and outlines manufacturing techniques. An extensive bibliography is included.

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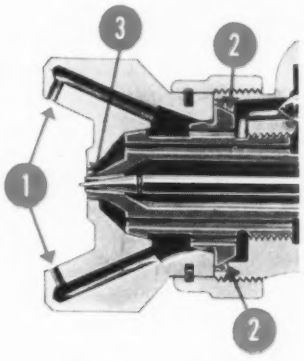
142. "Belt Grinding and Finishing"

New This 12-page brochure with an attractive four-color cover describes the use of coated abrasive belts as a high-speed means of grinding and finishing flat or contoured surfaces of all kinds of metal ranging from soft brass to super hard tungsten carbide, as well as other materials.

Included are typical case histories

A better nozzle for ceramics



Sprays full 8 hours without cleaning

After months of research in the laboratory and the field, Binks offers you a new and different nozzle for applying ceramic finishes. The new nozzle achieves better atomization through a sharp reduction in the number of air orifices, a complete rearrangement of orifice locations and a marked increase in orifice diameters. This new design:

1 **Doesn't plug or fog.** Binks new Ceramic Nozzle frees you from those annoying delays caused by plugging of the air orifices. In normal production spraying, Binks new Ceramic Nozzle will spray a full shift continuously, giving a completely atomized and controlled pattern.

2 **Saves air.** This one-piece nozzle, machined from solid brass, uses precision ground surfaces to form and maintain a perfect air seal. There is no soldering and the nozzle does not depend on a retainer ring for an air seal.

3 **Prevents wear.** Special tungsten carbide inserts in the material nozzle and in the needle valve provide 8 to 10 times greater life than alloy steels. These inserts will not break due to brittleness.

4 **Saves material.** Previously, multiple passes were often needed to get required film thickness. Binks new nozzle will do the job in one pass. Properly used, the nozzle can mean up to 20% savings in material.

5 **Operates at low pressure.** This nozzle produces perfectly atomized pattern with air pressure as low as 25 pounds at the nozzle.

6 **Saves time, reduces fatigue.** Since only one pass is needed, it takes less time to finish your products. Reduction of fatigue boosts production, eliminates rejects.

7 **Saves money—simple kit converts present equipment.** You don't need to buy new spray guns! Binks new Ceramic Nozzle fits either the Binks Model 18V or 19V Spray Finishing Guns. If you are presently using these guns, all you do is change nozzles.

Specifications. 63 CVT x 66 PH (0.052" orifice); 64 VT x 64 PA (0.064" orifice), 67 VT x 67 PD (0.086" orifice).

MAIL COUPON for information on NEW Nozzle!

Binks

Binks Mfg. Co.
3122-40 Carroll Ave.
Chicago 12, Ill.

☐ Please have your Ceramic Engineering Department rush me full data, including prices, about your new nozzles for Ceramic Spraying.

☐ Send me class dates and other information about your school.

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE___ STATE_____

Ask about our school. Provides training in best finishing methods. No charge for tuition. Write Binks for class dates.

REPRESENTATIVES IN PRINCIPAL U. S. & CANADIAN CITIES · SEE YOUR CLASSIFIED DIRECTORY

citing examples of significant savings in unit costs and greatly increased production where the abrasive belt method has been adopted.

---

143. Problem solutions for slitting, shearing and leveling, and other high speed production operations

New This 16-page booklet on "Problem Solutions by Wean" graphically presents the problems and solutions for high speed production operations, including slitting, shearing and leveling in one operation. The booklet has an attractive four-color cover.

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144. Electric heaters and controls

New A newly revised catalog covering electric heaters and controls, is said to be one of the most comprehensive pieces of literature on the subject. Included are technical bulletins on strip and flat-type heaters, cartridge heaters, immersion heaters, pre-heaters, hot plates, air heaters, ovens, thermostats, and blast coils.

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145. Automatic controls for heating

New Just released is a 1954 condensed catalog on Penn automatic heating controls. It's a 28-page, three-color issue containing information on specifications, applications, engineering data and the procedure for ordering controls for oil, gas or coal heating systems. Listed for the first time is a short shank warm air furnace control for mounting directly on the furnace casing.

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146. A book of engineering drawings, specifications for metal stampings

New This book of engineering drawings and specifications for metal stampings — the 8th in a series — is completely revised and

contains hundreds of more parts than before. It informs the user how certain metal stampings can be made to specifications without die charges. It is not a catalog in the usual sense, and does not contain any price lists.

A wide variety of parts are shown, including: tubing and wiring clamps, pipe clamps, expansion plugs, core hole plugs, retainers, special lockwashers, horse-shoe washers, valve spring washers, etc. It is pointed out that these parts are not kept in stock, but are made to order.

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147. Ply-veneer shipping containers

New The advantages of Ply-Veneer for use as shipping containers and pallet boxes are listed in a new folder which illustrates different types of containers made from laminated Douglas fir veneer and kraft container board. It is stated that these containers "retain the stiffness and resistance to crushing of wood; offers the light weight and smoothness of fiber cartons." The result is an easily printed, easily handled container as rugged as any similar box.

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148. Plant identification signs made of porcelain enamel

New Plant identification signs made of porcelain enamel are the subject of a new bulletin. In addition to photos of sign installations, the bulletin features data on why these signs are a sound investment.

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149. Convectioneered industrial ovens

New A new catalog, illustrating a line of convectioneered industrial ovens, describes design features and engineering flexibility of 13 types of ovens.

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150. Chrome yellow pigments

New Three new yellow pigments are described in detail in new bulletins. Samples of the pigments are also available to paint users. A chrome yellow light lemon is expected to find acceptance in combination with blue pigments to make clean greens of good light resistance. A chrome yellow medium is characterized by good light resistance, high strength, clean shade, high hiding power, low oil absorption, and freedom from bleed in most types of vehicles. Another chrome yellow medium is especially designed for use in Federal Specification TT-E-4856.

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151. Photo story of Mahon

New "A Picture Story of The R. C. Mahon Company" is a 46-page, two-color, profusely illustrated book designed to portray the company's extensive metal fabricating and production facilities, its products and services, and its capacity to serve industry.

FINISH
360 N. Michigan Ave.
Chicago 1, Illinois

Please forward to me at once information on the new supplies and equipment and new industrial literature as enumerated below:

No._____	No._____	No._____	No._____
No._____	No._____	No._____	No._____
No._____	No._____	No._____	No._____

Name _____ **Title** _____

Company _____

Company Address _____

City _____ **Zone**____ **State** _____

All-industry refrigeration and air conditioni[illegible]xp

TWO hundred and twenty-five companies conducted the largest display of refrigeration and air-conditioning equipment ever assembled during the 8th All-Industry Refrigeration and Air Conditioning Exposition, held at the Cleveland Public Auditorium, November 9-12.

This year's exposition was the first to be sponsored by the Air-Conditioning and Refrigeration Institute (ARI) which was formed earlier this year by a merger of the Refrigeration Equipment Manufacturers Association and the Air Conditioning and Refrigerating Machinery Association *(see May 1953* finish*)*.

Some 62,500 square feet of exhibit space was utilized for the show. 15,000 visitors was the reported attendance. 5,000 pieces of equipment and component parts, valued at $2,000,000, were shown and demonstrated by 2500 factory representatives, engineers and salesmen.

Both component parts and complete equipment were displayed, with complete units playing an increasingly important role. Among the many items of equipment displayed were the following:

Air-conditioning systems, air conditioning units, automobile air conditioning units, biological cases, beverage and beer dispensing equipment, beverage carbonator dispensing equipment, beverage wall cases, bottle beverage coolers, commercial freezers, commercial refrigerators, chest type food freezers, counter display cases, cafeteria water coolers, draft beer coolers, drinking water coolers, dehumidifiers, dairy wall cases, dairy display cabinets, electric fans, florist refrigerated display cases, frozen food display cabinets, heat pumps, humidifiers (domestic and industrial), home bar and bottle coolers, household refrigerators (portable).

Also, ice cube and ice flake ma-

George S. Jones, Jr., ARI managing director.

L. C. McKesson, ARI president.

Kickoff breakfast at ARI-sponsored exposition — *Left to right at speaker's table: Lud Emde, pres., Temprite Products; M. M. Lawler, vice pres., Worthington; W. A. Siegfried (exposition chairman), pres., Superior Valve & Fittings; B. V. Blazer, pres., Refrigeration Equipment Wholesalers Assn.; Geo. Howe, pres., Refrigeration & Air Conditioning Contractors Assn.; L. C. McKesson (ARI president), vice pres.-sales, Ansul Chemical; Robt. Joyce, pres., Cleveland Hotel Assn.; R. L. Harrison, pres., Commercial Refrigerator Mfrs. Assn.; James Emmett, Jr., sales and adv. mgr., Jas. P. Marsh Corp.; W. F. Switzer, commercial & air conditioning sales mgr., Frigidaire; H. F. Spoehrer, vice pres., Sporlan Valve; H. A. Harty, adv. mgr., Wolverine Tube; Geo. S. Jones, Jr., ARI managing director.*

nixposition

chines, ice cream display cabinets, meat display cases, milk coolers, open-type dairy cases, open-type product display cases, packaged water coolers (self-controlled and remote controlled), packaged store-type air conditioning units, room air conditioning units (console and window type), refrigerated show cases, reach-in wall cases, reach-in cases, remote control display cases, soda fountains and carbonators, supercharger carbonators, soft drink dispensers, storage cases, upright food freezers, unit coolers, water chillers, wall cases, walk-in coolers and year-round residential air conditioning units.

Peak sales for 1954

ARI has predicted that on the basis of 1953 sales trends, an all-time sales peak will be reached during the coming year.

A survey of exhibiting companies points to a big increase in air conditioning for offices, stores, homes and factories during the next few years. The study shows these companies believe that one-third of all offices in the country will be air conditioned within five years, one-third of all homes within eight years, and one-third of all factories within twelve years.

The trend in homes is expected to be toward year-round conditioning units for both heating and cooling. Automotive air conditioning is considered as a potent factor for future business. Increased use of air-conditioning in factories, both for employee comfort and precision control is a factor, according to ARI.

In the refrigeration field, a rapid replacement of food store shelving by low temperature cabinets for frozen foods is expected, according to the study. Many exhibitors said that larger individual units for supermarkets, and more of them, are in prospect. The handling of fresh

Demonstrating that it's indubitably cold inside a refrigerator is Miss Carolyn Crusan, selected as "Miss B-r-r-r", at Refrigeration and Air Conditioning Exposition held in Cleveland's Public Auditorium.

fruits and produce is also expected to be revolutionized by refrigeration equipment of newer types.

Among other developments expected, according to the survey are: smaller sizes of window-type air-conditioners; use of lighter weight metals to reduce the weight of units; changes in design to reduce noise of operation; greater sales and, consequently, lower prices.

Meetings for four industry groups

In addition to housing the big exposition, Cleveland played host to four industry groups whose meetings were held in conjunction to the show. These organizations were: Refrigeration Service Engineers Society, Refrigeration Equipment Wholesalers Association, Refrigeration and Air Conditioning Contractors Association, and the National Commercial Refrigerator Sales Association.

Jones reports $1,000,000,000 manufacturers value

In an address delivered before the annual dinner of the National Commercial Refrigerator Sales Association, George S. Jones, Jr., managing director of ARI, said:

"This year (1953) will stand out as a great milestone . . . for the first time sales at the manufacturers' level of *air-conditioning and refrigeration*, excepting only household refrigerators, and farm and home freezers, amount to over $1,000,000,000 — up just about 50% since 1947."

" . . . less than 50,000 room air-conditioners were shipped by manufacturers in 1947," continued Jones. "Today, six years later, something over 1,000,000 will be shipped . . . at the same time some 70,000 packaged and self-contained air-conditioning units, and over 50,000 year-round residential-type installations are included in the public acceptance. . . . "

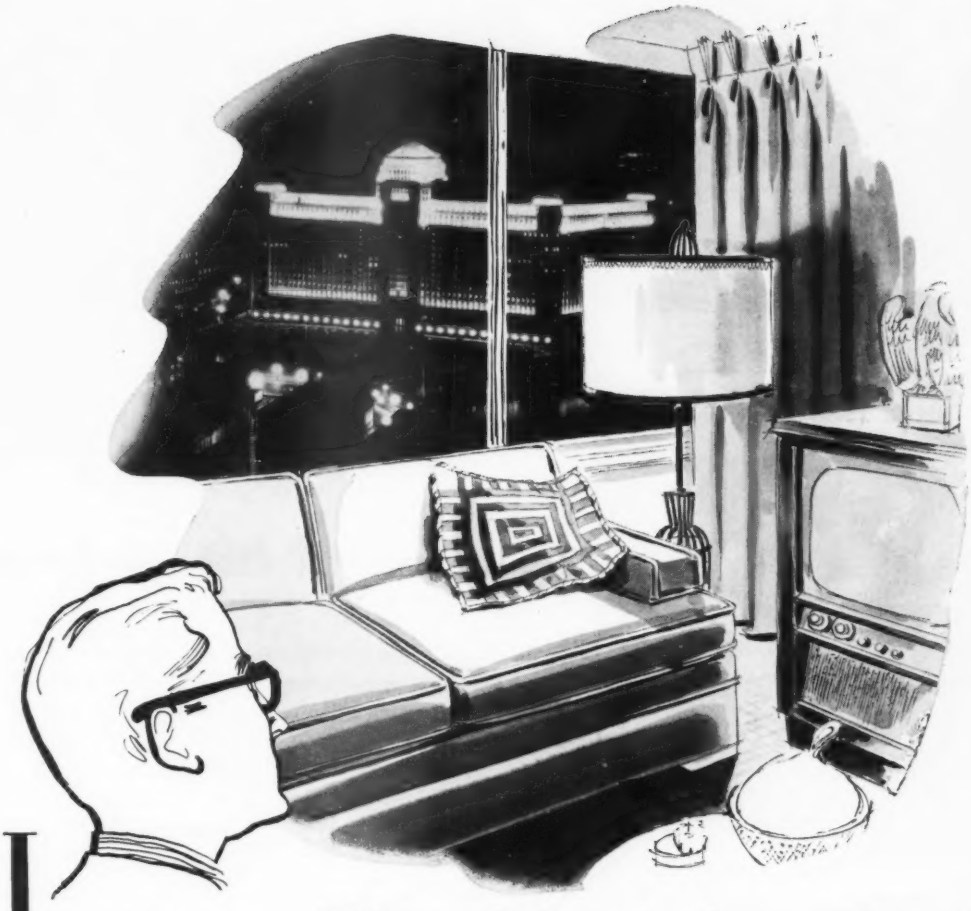
The speaker referred to *Refrigeration* as the factor "on which our entire method of delivering the food we eat, to the tables we eat it on, depends" and to *Air-Conditioning* as "the last great step in man's eternal effort to do something more than talk about the weather."

Jones called attention to the fact that frozen food production has gone up four times since 1947, when outlining the future prospects for all types of commercial refrigeration equipment (6,000,000,000 pounds of frozen foods alone per year).

Manufacturers of *water cooling units* were urged to go after their share of the business.

With the sale of food and beverages at $45,400,000,000, managing director Jones feels there is a bright future for the manufacturers who build the equipment for freezing, storing, handling, displaying, and preserving (in the place of consumption) this vast requirement.

A trend to packaged air conditioners was noted at the Cleveland exposition. This one was displayed by General Electric's air conditioning department.



Look to The Mart for the best in new home furnishings . . . .

AT THE INTERNATIONAL HOME
FURNISHINGS MARKET... JANUARY 4th to 15th

SEE!

- 209 *Lines of Furniture and Bedding.*
- 948 *China, Glass, Pottery and Gift Lines.*
- 476 *Lines of Housewares, Appliances, Radios and Televisions.*
- 174 *Lines of Curtains, Draperies and Fabrics.*
- 134 *Lines of Floor Coverings.*
- 250 *Lines of Toys, Games and Wheel Goods.*
- 224 *Lamps, Shades and Lighting Fixture Lines.*
- 161 *Linens, Beddings and Domestic Lines.*

In addition to these 2576 outstanding lines of merchandise, see the sparkling new "Today in Tradition" exhibition on the 17th floor, produced in conjunction with the American Institute of Decorators; "Good Design" on the 11th floor, done with The Museum of Modern Art from New York; and the brilliant leather show, "Leather in Decoration," on the 17th floor, produced by the Upholstery Leather Group, Inc. of the Tanners' Council of America. . . . . .

FREE!

The Mart's Bus Service—Buses from all loop hotels to The Mart every ten minutes from 7:30 a.m. 'til 10 a.m. Return schedule from 4 p.m. to 6 p.m. and twice-an-hour-during-the-day bus service between The Mart and Furniture Mart . . . . . .

The Merchandise Mart
SHOW-PLACE OF AMERICA'S BEST-KNOWN BRANDS

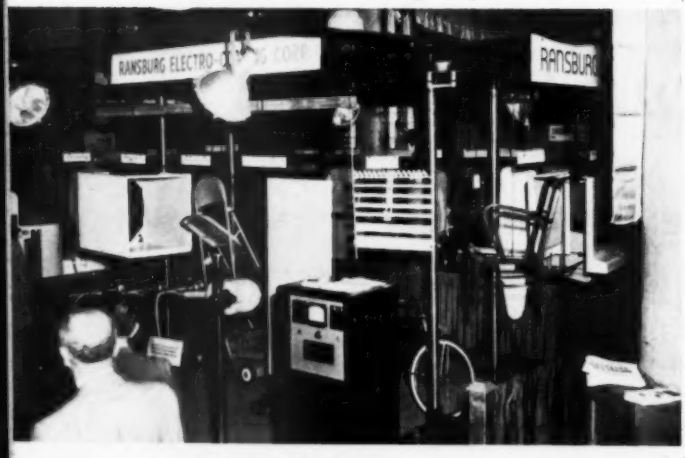
General Electric Company

The Fahralloy Company

Jensen Specialties, Inc.

finishfotos

Ransburg Electro-Coating Corp.



Frederic B. Stevens, Inc.

National Metal Exposition and

MORE than 75,000 management officials and production engineers attended the 35th National Metal Congress and Exposition held at the Public Auditorium, in Cleveland, Ohio, October 17-23. This total does not include some 1200 exhibitors' personnel.

A total of 462 firms unveiled their newest and most improved production equipment for use by the metal working industries. The equipment exhibited at the show was valued at more than $25 million and represented practically every phase of metals "from mine to mill and factory." The exhibits covered five and one-half acres of display space.

The show and congress was sponsored by the American Society for Metals, the Institute of Metals Division of American Institute of Mining & Metallurgical Engineers, the American Welding Society, the Society for Non-Destructive Testing, and the Metals Section and Metals Division of Special Libraries Association.

New officers of American Society for Metals

During the show, the following officers of the American Society for Metals took office:

President — J. B. Austin, director of research laboratories, United States Steel Company, Kearny, New Jersey.

The Cyril Bath Company

Westinghouse Electric Corporation

Detrex Corporation

Tinnerman Products, Inc.

finishfotos

American Nickeloid Co.

Scientific Electric

...and Congress in Cleveland

Vice President — George A. Roberts, chief metallurgist, Vanadium-Alloys Steel Company, Latrobe, Pennsylvania.

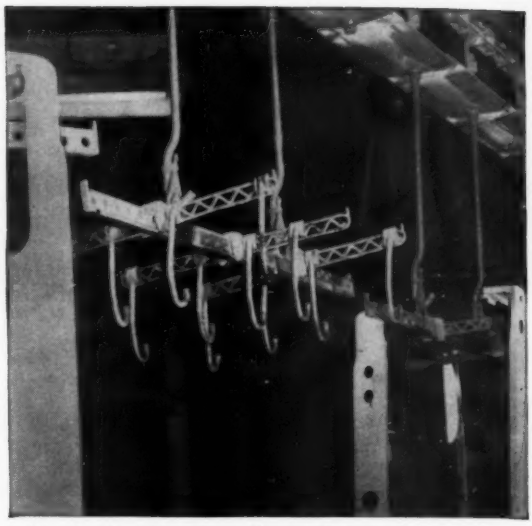
Treasurer — W. A. Pennington, chief metallurgist, Carrier Corporation, Syracuse, New York.

Secretary — W. H. Eisenman, ASM national headquarters (serving the second year of his 18th consecutive two-year term).

The following new ASM trustees also took office: G. M. Young, technical director, Aluminum Company of Canada, Ltd., Montreal, Canada, and R. J. Raudebaugh, professor of metallurgical engineering, Georgia Institute of Technology, Atlanta, Georgia.

In addition to Young and Raudebaugh, the ASM board of trustees consists of the following: A. O. Schaefer, vice president in charge of engineering and manufacturing, The Midvale Company, Nicetown, Pennsylvania; H. B. Knowlton, chief engineer, materials engineering, International Harvester Company, Chicago, Illinois; Ralph L. Wilson (past ASM president), director of metallurgy, Timken Steel and Tube Division, Timken Roller Bearing Company, Canton, Ohio; J. B. Austin (ASM president); W. A. Pennington (ASM treasurer); G. A. Roberts, (ASM vice president), and W. H. Eisenman (ASM secretary).

The Udylite Corporation



The AID CORPORATION at Clayton, Georgia, designed these strong, heat resisting "coat hangers" for THE FLORENCE STOVE CO., Lewisburg, Tenn. You can see why they used corrosion and oxidation resisting wrought Inconel when you examine these photographs made after 18 months at 1550° F.

Inconel Coat Hangers for long life and minimum maintenance

...18 Months with no time out

Are you troubled with bulky and heavy burning tools that require extra maintenance and give a short service life?

If you are, you'll want to know about some lightweight Inconel® fixtures. They were designed and fabricated by the AID CORPORATION of Clayton, Georgia, for THE FLORENCE STOVE COMPANY, Lewisburg, Tenn.

These fixtures have been in continuous use for over 18 months operating at 1550° F. and they are still in excellent condition.

They have required a minimum amount of maintenance. And what's more, fuel consumption has been *lowered* because Inconel's strength at elevated temperatures permitted the design of thin sections resulting in lightweight tools.

Enamel spoilage also has been reduced. For Inconel resists both corrosion and oxidation. And its tightly adhering oxide film resists scaling and spalling.

Inconel is ductile and readily fabricated. And Inconel welded joints are as strong and heat resisting as the alloy itself. This enables you to design for efficient furnace use and still have all the strength and corrosion resistance you need.

Are you troubled with a high temperature equipment problem in your operation?

Inco's High Temperature Engineers would like to work with you to find a solution.

Possibly they already have the answer among the accumulated data they have acquired through research on similar problems.

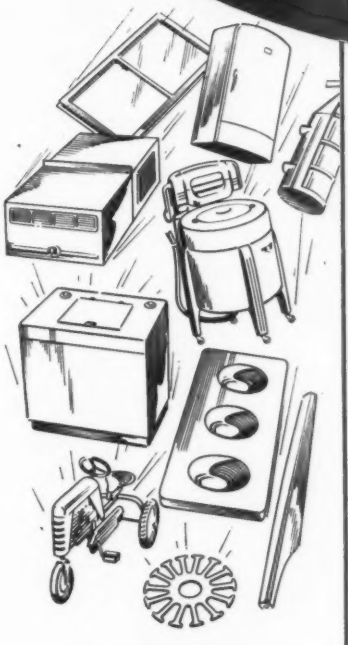
To help them get started, send for a copy of the High Temperature Work Sheet. It is designed to help you outline your problem.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street New York 5, N. Y.

INCO TRADE MARK

Inco Nickel Alloys

INCONEL®...for long life at high temperatures



FROM-BLUEPRINT-TO-
SHIPPING-CARTON

LOOK TO NEW MONARCH for SUPERIOR QUALITY

For producing highest quality stampings—where problems change with each new design and special usage—New Monarch is fully prepared, with 3 modern, completely equipped plants manned by specially skilled craftsmen and thoroughly competent engineers.

The most up-to-date processes and facilities enable us to turn out custom quality stampings and fully assembled sheet metal items on a mass-production basis with utmost economy to you.

For more than 43 years, the New Monarch Company has been a major supplier to many of the country's leading appliance manufacturers and has consistently met the needs of the most discriminating customers.

Consultation invited.

When in need of Stampings

MONARCH QUALITY

Write today or send blueprints for estimates.

See...

NEW MONARCH MACHINE & STAMPING CO.
406 S.W. NINTH STREET — DES MOINES 9, IOWA

NEMA elects new officers

Jewell elected president of National Electrical Manufacturers Association; Rich named chairman of NEMA Major Appliance Division

AT THE 27th annual meeting of the National Electrical Manufacturers Association, J. H. Jewell, vice president of Westinghouse Electric Corp., Pittsburgh, Pa., was elected president to succeed L. G. Hall, president of Stackpole Carbon Co., St. Marys, Pa.

New vice presidents of NEMA include: J. L. Busey, vice president, General Electric Co., New York City; Hoyt P. Steele, executive vice president, Benjamin Electric Mfg. Co., Des Plaines, Ill.; J. W. Corey, president, The Reliance Electric & Engineering Co., Cleveland; W. A. Elliott, president, Elliott Co., Jeannette, Pa.; and F. F. Loock, president, Allen-Bradley Co., Milwaukee.

A. F. Metz, president, The Okonite Co., Passaic, N. J., continues as treasurer.

R. A. Rich, vice president, Philco Corp., Philadelphia, was elected chairman of the NEMA Major Appliance Division. D. A. Packard, general sales manager, Kelvinator Division, Nash-Kelvinator Corp., Detroit, was named vice chairman.

J. H. JEWELL

Appliance section officers

Range Section: Chairman, D. J. Irvine, sales manager for ranges and water heaters, Hotpoint Co., Chicago; vice chairman, H. H. Hubbard, vice president, Philco Corp., Mt. Clemens, Mich.; chairman of technical committee, H. W. Schulze, manager, range engineering division, Philco Corp., Philadelphia.

Water Heater Section: Chairman, W. R. Arbuckle, manager, water heater and kitchen utilities department, Westinghouse Electric Corp., Mansfield, Ohio; vice chairman, E. J. McFadden, general manager, water heater division, Combustion Engineering, Inc., Chattanooga, Tenn.; chairman of technical committee, C. E. Hughes, manager, water heating engineering, Hotpoint Co., Chicago.

Household Sink Units Section: Chairman, W. R. Arbuckle, manager, water heater and kitchen utilities department, Westinghouse Electric Corp., Mansfield, Ohio; vice chairman, F. J. Nugent, vice president-sales, The Schaible Co., Cincinnati; chairman of technical committee, Dr. Hans Tordan, chief engineer, Given Mfg. Co., Los Angeles.

Dehumidifier Section: W. L. Jeffery, sales manager, refrigeration and ranges, Kelvinator Division, Nash-Kelvinator Corp., Detroit; vice chairman, H. F. Hildreth, refrigeration specialties department, Westinghouse Electric Corp., Springfield, Mass.; chairman of general engineering committee, R. H. Tull, section manager, refrigeration specialties department, Westinghouse Electric Corp., Springfield, Mass.

Farm & Home Freezer Section: Chairman, J. H. Overmyer, vice president - sales, Revco, Inc., Deerfield, Mich.; vice chairman, P. B. Thompson, assistant product specialist, refrigeration sales, International Harvester Co., Chicago; chairman of general engineering committee, Milton Kalischer, manager of engineering, Westinghouse Electric Corp., Springfield, Mass.

Refrigerator Section: Chairman, F. J. Bommer, vice president, Quicfrez, Inc., Fond du Lac, Wis.; vice chairman, H. J. Miller, manager, appliance sales department, Frigidaire Division, General Motors Corp., Dayton, Ohio; chairman of general engineering committee, Milton Kalischer, manager of engineering, Westinghouse Electric Corp., Springfield, Mass.

Bright outlook for 1954

One thing apparent at the annual meetings of the NEMA Major Appliance Sections was that members representing the various Sections look forward to 1954 with a determination to make it the best year in electric appliance history. With build-

to Page 83 →

R. A. RICH

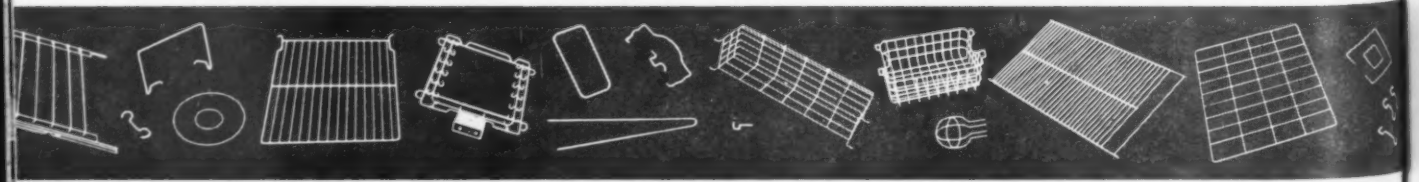
• Shattering all of the world's previous standards of comfortable living, the appliance manufacturers of America are continuing to create new high concepts of convenience and efficiency in the home. Union Steel is gratified indeed to have been selected by so many of these leaders to be a part of their "company of high progress". For, to us, inclusion in this company undeniably signifies the exceptional quality and dependability of Union Steel wire parts.

THESE APPLIANCE MANUFACTURERS ARE BUT A FEW OF THOSE EMPLOYING USP *CONTRACT* WIRE PARTS IN THEIR PRODUCTS

Ace Cabinet Corp.
A C Spark Plug Division General Motors Corp.
American Seating Co.
Berko Electric Mfg. Corp.
Chambers Stove Manufacturing Corporation
The Columbus Show Case Company
The Coolerator Company
Crosley Division • Avco Manufacturing Corp.
Crown Stove Works, Inc.
Dieterich Products Corp.
Dwyer Products Corp.
Eagle Range & Manufacturing Company
The Fabri-Form Co.
Fanner Metal Products Co.
Florence Stove Company
"Forshaw" of St. Louis, Inc.
Franklin Plastics, Inc.
Franklin Transformer Manufacturing Company
Game-time, Inc.
General Electric
Gibson Refrigerator Co.
Glenray Sales & Manufacturing Co.
E. J. Harned Company
International Harvester Company
James Industries, Inc.
The Kawneer Company
King Refrigerator Corp.
The Lau Blower Company
Leeson Steel Products, Inc.
G. B. Lewis Company
Majestic Manufacturing Co.
W. F. Meyer & Sons Inc.
Midwest Manufacturing Corp. Subsidiary of Admiral Corporation
Milk Bottle Crate Company
The Murray Corporation of America
Nash-Kelvinator Corp.
Norge Division of Borg Warner Corporation
Norman Products Company
Orley Brothers Co., Inc.
Perfection Stove Company
Philco Corporation Electric Range Division
Presteline Home Appliances
The Quad Stove Mfg. Co.
Revco, Inc.
Geo. D. Roper Corp.
Rutenber Electric Co.
The Sunray Stove Co.
H. W. Tuttle & Company
United Refrigerator Co.
The Vendo Company
Vulcan-Hart Mfg. Co., Inc.
The Wagner Manufacturing Company
The Wooster Rubber Co.

UNION STEEL PRODUCTS COMPANY
Wire Products Division
ALBION, MICHIGAN

1903
Our Golden Anniversary
1953



RANGES
Runner assemblies
Oven shelves
Heating element supports

SPACE HEATERS
Heater guards
Frames

WASHING MACHINES and DRYERS
Grills and guards
Drying baskets
Element frames

REFRIGERATORS
Shelving
Baskets and trays
Light guards
Door baskets
Baskets

FREEZERS
Grills and guards
Evaporator shelves
Shelves
Door shelves

DISH WASHERS
Glass racks
Dish baskets
Special sec

National home laundry conference

including a report on "ultrasonic" and "sonic" machines for cleaning clothes

MORE than 500 home economists, high school and college instructors, home magazine editors, appliance manufacturers, and others with a particular interest in home laundry equipment, met in New York City, November 5 and 6, for the 7th National Home Laundry Conference, sponsored by the American Home Laundry Manufacturers Association.

At the opening conference session, attention was given to soaps and synthetic detergents by Allen W. Smith, of Dow Chemical Co.'s technical service development department.

This was followed by a general panel discussion of techniques in the use of washers, automatic tumbler dryers and automatic ironers, with the discussion lead by Mrs. Jessie Cartwright, director of the Home Institute, Norge Division of Borg-Warner Corp., Chicago.

Panel participants included: Miss Rose Mary Guerra, director of home economics, Easy Washing Machine Corp., Syracuse, N. Y.; Miss Helen Kirtland, director, Hotpoint Institute, Hotpoint Co., Chicago; Miss Mary K. Dougherty, national director, home economics bureau, Thor Corporation; Miss Margaret Davidson, associate editor, *Ladies Home Journal*, New York City; Mr. Helen W. Kendall, director, appliances and home care, Good Housekeeping Institute, *Good Housekeeping* magazine, New York City; and Hal L. Biddle, vice president, Ironrite, Inc., and chairman of special industry promotion committee.

E. O. Morton, of Westinghouse, discussed "sonic" washers.

Friday morning was devoted to education's part in telling the home laundering story to the homemakers of today and tomorrow. Mrs. Helen Judy Bond, head of the department of home economics, Teachers College, Columbia University, presided over a round-table presentation involving Miss Mary Rokahr, head of the department of general home economics, School of Home Economics, the University of Connecticut, at Storrs; Dr. Elaine Knowles Weaver, chairman of the division of housing and household equipment of the American Home Economics Association and associate professor of home economics at Ohio State University, Columbus; Dr. Elizabeth Beveridge, head, household equipment department, Iowa State College, Ames; Miss Irene McDermott, chairman, elementary, secondary and adult education, AHEA, and director of home economics education, Pittsburgh Public Schools, and A. J. Smalley, director of residential promotion, Duquesne Light Co., Pittsburgh.

Other speakers Friday: A. B. Murray, general service manager, The Maytag Company, Newton, Iowa; E. O. Morton, chairman of the Association's engineering and research committee, and household equipment engineer of Westinghouse Electric Corporation, Mansfield, Ohio; and Miss Helen C. Hamilton, director of the home service department of Corn Products Refining Co., New York City. Miss Hamilton made the first announcement of findings in a year-long study of using the household washer for starching garments. The conference proceedings were reviewed, as usual, by Mrs. Elizabeth Sweeney Herbert, president of the American Home Economics Association and home appliance editor of *McCall's*

Left: G. H. Klumb, of Culligan, filters tea back into colorless, tasteless water in an address on water conditioning.

Right: A. B. Murray, of Maytag, addresses the conference on the importance of proper servicing of laundry appliances.

At Vacuum Cleaning Conference — *which preceded the Home Laundry Conference, Alex Lewyt, (left), president of Lewyt Corp., and Robert A. Orr, director of vacuum cleaning division, General Electric Co., conduct drawing for vacuum cleaners at the conference luncheon.*

magazine, New York City.

A report on "sonic" washing

E. O. Morton, chairman of AHLMA's engineering and research committee, reviewed investigations conducted by different companies and organizations over the past few years on both "ultrasonic" and "sonic" washing equipment.

While ultrasonics are being used successfully in such commercial applications as the cleaning of small parts for precision equipment, Morton indicated that the use of ultrasonics is not feasible for washing clothes. The first major obstacle is the cost of a generator — up to $20,000 for a unit capable of handling 8 or 9 pounds of dry clothes. It would require a great deal of space, and probably would be very inefficient, weigh a great deal, and require an electrical engineer to run, stated Morton.

Sonic equipment does not hold too much promise either, though a number of companies and educational institutions, both in America and abroad, have conducted many experiments with this type of equipment.

Morton emphasized that conclusions drawn from test data received from various interested parties can be summarized in one simple, short sentence, "The washing performance of these machines is not significantly better than merely soaking the clothes for the same length of time in the same amount of water with the same amount of dissolved detergent (soap or syndet)."

At 40th anniversary — *of Vacuum Cleaner Manufacturers Association — held recently in Hot Springs, Va., were the following: Front row — J. F. Roach, Electrolux; T. F. Kelly, Hoover alumnus and at various times VCMA's emissary in Washington; Geo. Holmen and Mart Manley, Electrolux; C. G. Frantz, Apex, VCMA secretary-treasurer; Walter Dietz, Electrolux, VCMA president; R. E. Dobson, Westinghouse; O. M. Mansager, Hoover; and J. A. Kemper, Scott & Fetzer. Middle row — Jos. Hoover, Hoover; C. S. Fetzer, Scott & Fetzer; D. W. Randolph, Apex; Alex Lewyt, Lewyt; G. H. Scott, Scott & Fetzer; B. C. Neece, Landers, Frary & Clark; J. H. Nuffer, Air-Way; R. C. Dutt, Regina; William Shaw, public relations; Back row — F. C. Callahan, Health-Mor; David Guthrie and E. P. Senne, Electrolux; James Kirby, consulting engineer; L. F. Mead and John Mossman, Regina; D. L. Shillinglaw, Health-Mor; Lee Moss, Landers, Frary & Clark. Also shown is Mrs. Elizabeth Murray, assistant to C. G. Frantz.*

Christmas 1953

May all the joys, all the peace, all the contentment, all the serenity that is the spirit of Christmas be yours during the coming year.

Chicago Vitreous Enamel Product Co.

1407-47 South 55th Court • Cicero 50, Illinois

GAMA officers at board of directors meeting, left to right: T. T. Arden, first vice pres.; Lyle C. Harvey, treasurer; Sheldon Coleman, president, James F. Donnelly, retiring president; H. Leigh Whitelaw, managing director; and W. F. Rockwell, Jr., second vice president.

GAMA installs new officers

Coleman succeeds Donnelly as president of Gas Appliance Manufacturers Association

THE Gas Appliance Manufacturers Association held its installation of new officers during the annual meeting of the American Gas Association, held in St. Louis, Missouri, the week of October 25.

Executive officers

Sheldon Coleman, president of The Coleman Company, Inc., of Wichita, Kansas, took over the duties of president of GAMA, succeeding James F. Donnelly, vice president (sales) of Servel, Inc., of Evansville, Indiana.

The new first vice president is T. T. Arden, executive vice president of Grayson Controls Division, Robertshaw-Fulton Controls Co., Lynwood, California.

Second vice president is W. F. Rockwell, Jr., president of Rockwell Manufacturing Co., Pittsburgh, Pennsylvania.

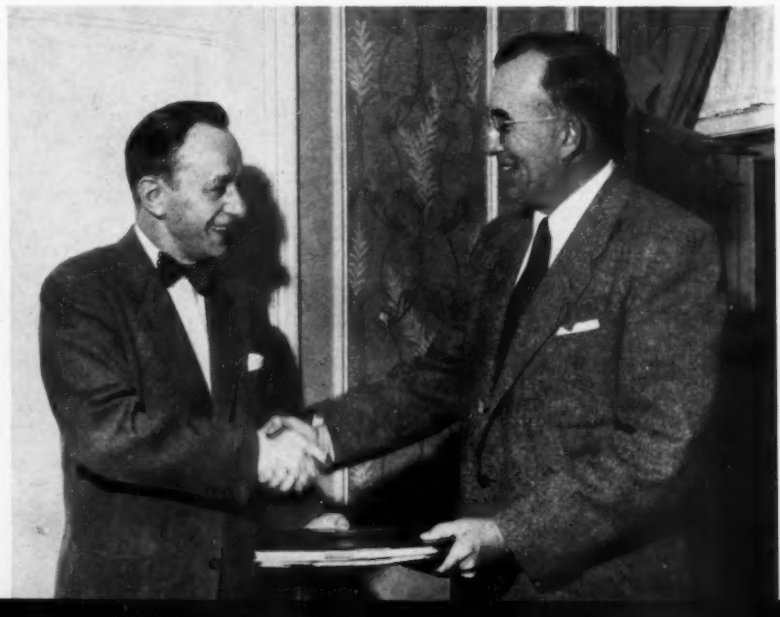
Treasurer is Lyle C. Harvey, president of Affiliated Gas Equipment, Inc., Cleveland, Ohio.

Division chairmen

Domestic Range: W. T. Trueblood, Jr., Magic Chef, Inc.; *House Heating & Air Cond. Equip.*, H. C. Day, American Radiator & Standard Sanitary Corp.; *Water Heater*, H. B. Carbon, Bastian-Morley Co.; *Clothes Dryer*, John Christensen, Hamilton Manufacturing Co.; *Meter and Regulator*, G. T. Bowman, Nordstrom Valve Div., Rockwell Mfg. Co., *Incinerator*, Robert D. Smith, Incinerator Products Co.; *Valve*, D. E. DuPerow, Lincoln Brass Works, Inc.

Automatic Controls, Frank H. Post, Robertshaw-Fulton Controls Co.; *Direct Heating Equipment*, Thomas D. Bromley, Peerless Manufacturing Corp.: *Relief Valve*, George B. Horne, Watts Regulator Co.; *Industrial*

James F. Donnelly (left), retiring president of the Gas Appliance Manufacturers Association, turns his portfolio over to Sheldon Coleman, who was installed as the president of GAMA at meeting held in St. Louis in conjunction with annual meeting of the American Gas Association. Donnelly is vice president of Servel, Inc., Evansville, Indiana. Coleman is president of The Coleman Company, Wichita, Kansas.



Pacific Coast Gas Association was represented at meeting by Ed Kern, left, PCGA assistant managing director, and J. F. Ray, right, vice chairman, PCGA Manufacturers Section and sales vice president of General Controls Corp., shown here with John Christensen, chairman of GAMA's clothes dryer division, and manager of promotions, Home Appliance Division of Hamilton Manufacturing Co.

rank Adams, president of Surface Combustion orp., receives the Distinguished Service Award the Industrial Gas Equipment Division of as Appliance Manufacturers Association. Citation, presented by Fred C. Schaefer, division hairman, and sales manager of American Gas urnace Co., named Adams as "one of the first foresee the potential of gas in industry."

Equipment, F. C. Schaefer, American Gas Furnace Co.; *Hotel, Restaurant, Commercial Equipment*, Wendell M. Smock, Vulcan-Hart Mfg. Co.; and *Appliance Regulator*, Frank J. Kern, Jr., Detroit Regulator Co.

Group chairmen

Gas Boiler, N. E. Westphal, Weil-McLain Co.; *Furnace*, Herbert G. Hayes, Armstrong Furnace Co.; *Floor Furnace*, F. D. Hart, Temco, Inc.; *Vented Recessed Heater*, A. J. Horn, Day & Night Division of Affiliated Gas Equipment, Inc.; *Unit Heater*, D. R. Webster, Reznor Mfg. Co.; and *Conversion Burner*, Harry Gurney, Surface Combustion Corp.

Frank Adams honored

Frank H. Adams, president of Surface Combustion Corp., Toledo, was given the distinguished service award of the Gas Appliance Manufacturers Association for his achievements as a "pioneer in the development of gas as a tool now employed in more than 26,000 industrial processes." The award was made by the trade group's industrial gas equipment division.

The citation named Adams as "one of the first to foresee the potential of gas in industry," and as an "outstanding leader in the development and implementation of gas as a fuel for all types of industrial processing which require precise control."

Adams entered the gas industry in 1922 as treasurer of the Combustion Utilities Corp., a research subsidiary of Henry L. Doherty Co., and has directed the development of Surface Combustion Corp., the successor company, since 1927.

He is a past president of the Gas Appliance Manufacturers Association and the Industrial Furnace Manufacturers Association, and was a director of both associations for many years. He also served on the board of directors of AGA.

Left to right: W. A. Raub, of E. F. Griffiths Co., retiring chairman of Meter & Regulator Div.; Edward A. Norman, of Norman Products Co., retiring chairman of House Heating & Air Cond. Equipment Div.; and D. E. DuPerow, of Lincoln Brass Works, Inc.; chairman of the Gas Valve Division.

Industry leaders at GAMA board meeting discuss the AGA-GAMA gas industry development program. Left to right: W. F. Rockwell, chairman, Rockwell Manufacturing Company; Lyle C. Harvey, president, Affiliated Gas Equipment, Inc.; Frank H. Adams, president, Surface Combustion Corporation; and George Richards, who acts as general counsel for the Gas Appliance Manufacturers Association.

New Processes for Industry

Metal treating method produces uniform surfaces

Photo on left shows operator guiding metal parts to be processed with one hand, while directing the Metablast gun with the other.

Photo above shows how a casting mold (on right) has been restored with a clean-as-new surface. On left is similar mold prior to cleaning.

A NEW method of treating metals to produce surfaces of consistent uniformity has been announced by American Metaseal Manufacturing Corp., of West New York, New Jersey.

Known as "Metablast", the new process consists of shooting a specially developed abrasive, that is suspended in a liquid, in a controlled high pressure spray against a metal surface. The spray produces many minute identical "wells". These tiny pits can be varied in coarseness or fineness, as desired, by using several different grades of abrasive, and changing the spray's length, force, or direction. It can maintain tolerance of precision parts to 0.0001 inch.

It is stated that with Metablast, engineers are now able to achieve predetermined surfaces time after time without variation.

A pre-treatment prior to painting, bonding, plating and buffing

Metablasting can also be used as a pre-treatment to prepare metal for painting, bonding, plating and buffing. The slightly roughened surface provides a "toe-hold" for coatings and assures an intimate bond, according to the sponsors of this process. In buffing, the mat surfaces have reduced buffing time in some operations by as much as 90 per cent.

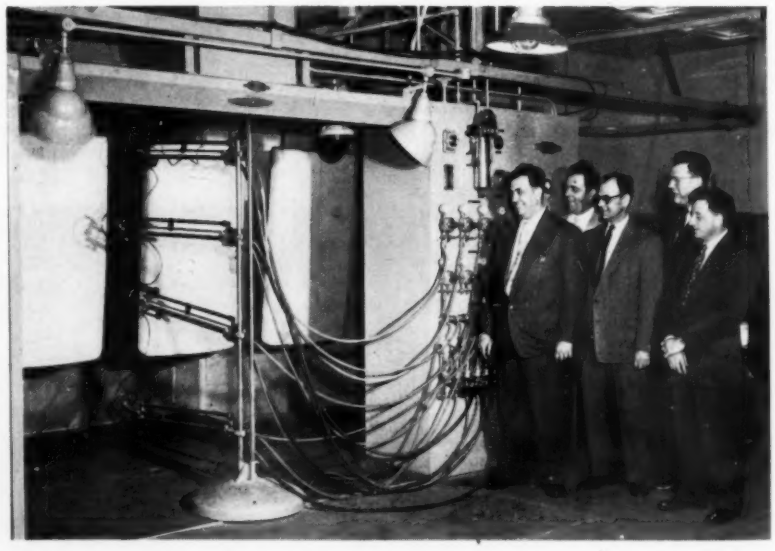
Special guns for high potential paint spraying

ONE of the comparatively recent developments for the electrostatic desposition of finishes for appliances and other fabricated metal products is the "Ionic" gun as manufactured by Scientific Electric, of Garfield, New Jersey. This company has been designing and manufacturing high frequency and high voltage equipment since 1921.

Photo below shows a set-up for the finishing of refrigerator doors with Ionic high potential spray equipment. Left to right in the photograph are: Tony and Rocco Montagno, sales representatives; Ben Edman, The Glidden Company, J. C. Scharmer, Deepfreeze Appliance Division of Motor Products Corp., and Marcel Pouilly, The Illinois Spray & Equipment Co.

In photo at right, Marcel Pouilly, and John J. Sedlacsik, Jr., of Scientific Electric, are shown with four

types of guns. Left to right, they are: standard Ionic gun, Ionic recirculating gun, centrifugal-type gun, and standard Ionic gun with paint heater attached.



10-year foundation for customer-attracting finishes...

Beverage cooler manufactured by Mundean Mfg. Co., Columbus, Ohio, using Republic Electro Paintlok Sheets for the enamel-finished exterior and the natural-finish inner liner. Trim is Republic Enduro Stainless Steel.

Republic

ELECTRO PAINTLOK SHEETS

The makers of this beverage cooler estimate that its bright red finish still will be pulling in customers after 10 years of service, outdoors or in.

The body and inside liner of the cabinet are Republic Electro Paintlok . . . the zinc-coated steel sheet that is chemically treated to *take* paints, lacquers, and synthetic enamels *smoothly* . . . and *hold* them for years, even under hard service and severe exposure.

What's more . . . the tight zinc coat helps protect the steel and the enameled finish from creeping rust and corrosion even if the painted surface should be scratched.

When you receive Republic Electro Paintlok Sheets, they are ready to paint after a simple cleaning to remove shipping grime. Even after drawing to shape, these sheets require only degreasing before painting. The zinc coating clings tight, is not cracked or peeled by normal fabrication procedures.

Get all the facts on Republic Electro Paintlok Sheets for your fabricated steel products that need to look better longer. Ask for Booklet 525.

REPUBLIC STEEL CORPORATION
GENERAL OFFICES, CLEVELAND 1, OHIO
Export Department:
Chrysler Building, New York 17, N. Y.

Republic
REPUBLIC STEEL
ELECTRO ZINC PLATED SHEETS
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Other Republic Products include Carbon, Alloy and Stainless Steels—Sheets, Strip, Plates, Bars, Pipe, Tubing, Bolts and Nuts, Wire

Paint, varnish and lacquer industry meets

including a report on the 20th anniversary program of the Industrial Product Finishes Division of the National Paint, Varnish and Lacquer Association

MEMBERS of the National Paint, Varnish and Lacquer Association met in Atlantic City, October 26, 27 and 28 for their industry's 65th annual meeting. A feature of the meeting was the 20th anniversary program of the Industrial Product Finishes Division.

The president's report

In his annual report, Joseph F. Battley, NPVLA president, brought out that the industry sales during the current year were breaking sales records of previous years. Industry sales for the first eight months were 6.2 per cent ahead of 1952, and topped the record year of 1951 by 1.4 per cent. He said that reports of the Bureau of Census indicated that the record-breaking trend will continue.

"We have enjoyed a productive and prosperous year," stated Battley. "I am sure that no one will lament the fact that nobody has succeeded in talking us into a depression. There has been some reduction in government spending because of the truce in Korea, but this has been gradual and will continue so. We do not have to rely upon emergency spending to be prosperous in the United States. And we can be assured of a healthy, normal economy.

"There is one advantage in the concern expressed by many that there is a possibility of a recession. This talk has acted as a brake on those who otherwise may have rushed headlong into expansion programs, and then found themselves overextended and with no ready market for their expanded production. Smart businessmen have learned to adjust themselves to changes smoothly and calmly rather than abruptly. We can qualify in that category," he stated.

20th anniversary of industrial product finishes division

During the Industrial Product Finishes Division session, presided over by Joseph A. Hager, of Grand Rapids Varnish Corp. and chairman of the Division's steering committee, W. I. Longsworth, of Lilly Varnish Co., took his audience back 20 years into history.

He pointed out that prior to 1933, the Association activities of the industry had been divided, with two principal associations — the National Paint, Oil and Varnish Association, Inc., and the American Paint and Varnish Manufacturers Association, both primarily interested in trade sales.

At a convention held at the Edgewater Beach Hotel, in Chicago, in early November of 1933, the two associations were dissolved, and the National Paint, Varnish and Lacquer Association was organized.

Earlier, on October 3, a small group of industrial product finishes manufacturers met in New York City. They developed plans for an industrial group to be incorporated in the National Paint, Varnish and Lacquer Association which was to be established a few weeks later. The bylaws adopted at the 1933 annual convention provided for two divisions in the newly consolidated association, namely, Trade Sales and Industrial (Product) Finishes.

Looking ahead to new finishes and application methods

L. S. Guthman, of Bradley & Vrooman Co., presented an address on the future for industrial product finishes.

"In looking ahead," said Guthman, "we can see the possibility of materials that are 100% solids. This is the principle that is used in the laminating resins of the epoxy types; and as a matter of fact, it is now being accomplished through the use of

to Page 84 →

The special 20th anniversary program of the NPVLA Industrial Product Finishes Division was presided over by Joseph A. Hager, chairman of the Division's steering committee.

TROUBLE-FREE PHOSPHATIZING
with Pennsalt's outstanding NEW

FOSBOND

A COMPLETE SYSTEM—EVEN INCLUDING A DYNAMIC MERCHANDISING PLAN!

If phosphatizing has been a headache in your plant, here's the news you've been waiting for! Now Pennsalt, long a leader in the metal processing field, offers everything you need for uniform, trouble-free phosphatizing—for better, longer-lasting finishes.

The Fosbond Process comprises various Pennsalt-made chemicals for all operations from cleaning, pickling, and phosphatizing, through rinsing. They have been engineered to provide an excellent pre-paint corrosion-resistant surface while offering simplified operation through an entire balanced cycle. Major finish manufacturers have approved Fosbond for use wherever phosphate coatings are required under organic finishes.

Sound Technical Assistance

To help Fosbond users initiate and maintain this Process, Pennsalt offers technical assistance—on a regular, scheduled basis—from qualified, experienced specialists. These men will get the Process running smoothly on your operation and help you keep it that way.

But that's not all! Fosbond has qualified for the famous *Good Housekeeping Guaranty Seal*, which has been incorporated into the colorful Fosbond emblem (see illustration). To gain wide public acceptance, this new merchandising symbol is being advertised in *Good Housekeeping*, *The Saturday Evening Post*, and other publications. Authorized manufacturers may affix this emblem to their Fosbonded products—thus gaining a valuable sales "extra."

Ask us to prove it!

So you can see actual Fosbond test panels for yourself, we will send you either Fosbond chemicals with which you can prepare panels, or panels prepared in our laboratories which you can then test. You be the judge! Just tell us 1) type metal to be phosphatized, 2) phosphate coating now used, 3) method of application, 4) organic finish used, 5) standards finish must meet.

Or, give us details about your operation, and we shall gladly answer questions about Fosbond as specifically as possible. Write: Metal Processing Dept., 464 Widener Bldg., Philadelphia 7, Pa.

PROCESS

A COMPLETE SET OF COMPOUNDS

for cleaning, pickling, phosphatizing, and rinsing. All from one reliable source—Pennsalt

APPLIED IN A BALANCED CYCLE...

tailor-made by Pennsalt engineers to fit your operations and equipment

SERVICED AND MAINTAINED...

by experienced field servicemen on a regular, scheduled basis

ADVERTISED AND MERCHANDISED

to help pre-sell your quality finish to wholesalers, dealers, and consumers

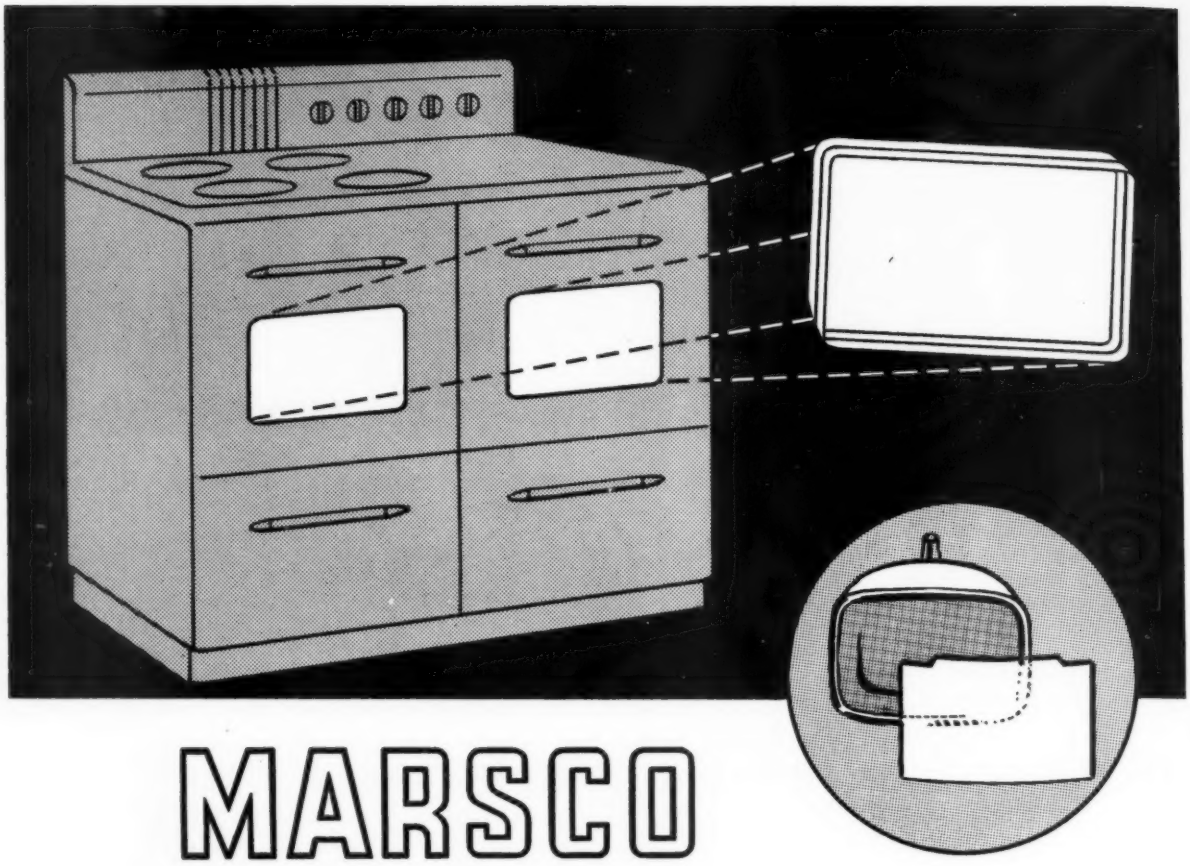
At Pennsalt's famous Whitemarsh Research Laboratories, where Fosbond was developed, there are unusually fine testing facilities at the disposal of manufacturers using the Process.

FOSBOND IS A PENNSALT TRADEMARK

A better start for your finish

Pennsalt Chemicals

PENNSYLVANIA SALT MANUFACTURING COMPANY



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FOR UTILITY AND BEAUTY

Glass — enhances the beauty and broadens the acceptance of your product whether in the utility appliance field or the growing electronic industry.

Glass — adapted with skill and precision by MARSCO to meet your product requirements — For Today — For Tomorrow.

Glass — flat as can be — precisely shaped to fit.

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Join the major appliance manufacturers now enjoying extra sales from the appeal and prestige contributed thru the luster of glass — MARSCO'S Crystal Clear Glass.

Our engineers are experienced in incorporating glass as viewing windows in domestic appliances and television cabinets.
A simple request to us solves your problem.

Bent Glass

Convex Glass

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"TYLER REFRIGERATION CORP."

A change in the corporate name of Tyler Fixture Corp. to Tyler Refrigeration Corp. has been approved by the board of directors, according to Robert L. Tyler, president, who stated "The change in name reflects the change Tyler made during the past 28 years, from manufacturing conventional store fixtures to manufacturing a complete line of refrigerated food storage equipment."

BRIGGS BEAUTYWARE DIVISION NOT INCLUDED IN CHRYSLER DEAL

According to a news release from Chrysler Corp., the recently announced purchase of Briggs Mfg. Co. by Chrysler "does not include the Briggs Beautyware Division nor the plants identified with that operation."

TEMCO APPOINTS SNOW QUALITY CONTROL MANAGER

Temco, Inc., Nashville, has announced the appointment of Mel Snow as chief quality control engineer. In the newly-created position, Snow will be responsible for the testing of all material furnished by suppliers, maintaining a systematic check on all manufacturing processes, and the conducting of rigid tests on finished products.

Prior to joining Temco, Snow taught industrial management at Alabama Polytechnic Institute, at Auburn, Alabama. In addition to his duties at Temco, he is currently teaching a course in statistical quality control at the University of Tennessee Extension, in Nashville.

GRAZIER ELECTED PRESIDENT OF AMERICAN-STANDARD

Joseph A. Grazier was recently elected president of American Radiator & Standard Sanitary Corp., succeeding Theodore E. Mueller, who was elected chairman of the board.

Mueller, who had served as president since 1946, began his association with American-Standard in 1904 as a pattern maker's apprentice. Grazier, who had been serving as president since June, joined the company in 1937 as a staff member in the office of the secretary.

PERFECTION NOW MAKING GAS WATER HEATERS

The first gas water heaters in its products line has been announced by Perfection Stove Company, Cleveland, Ohio. Previously, the company had made oil, electric and kerosene models, only. The gas water heaters are being produced in 20, 30 and 40-gallon sizes.

MARLOW, BELL & GOSSETT MERGE

Marlow Pumps, Ridgewood, N.J., a leading manufacturer of self-priming centrifugal pumps, merges, as of December 1, with Bell & Gossett Co., Morton Grove, Ill., manufacturers of hot water circulating pumps, universal pumps, heat exchangers, flow controls valves and other heating specialties.

According to A. S. Marlow, Jr., president, the joining of Marlow with Bell & Gossett makes the new combination one of the largest of its type in industry.

CHAPMAN HEADS MFG. FOR NASH-KELVINATOR

Bernard A. Chapman, formerly production manager, has been appointed manager of manufacturing of Nash-Kelvinator Corp., it was announced by George W. Mason, president and chairman.

Chapman's promotion places him in charge of all manufacturing operations of the Nash and Kelvinator divisions. This includes assembly plants in Detroit and Grand Rapids, Mich., Milwaukee and Kenosha, Wis., and El Segundo, Calif., said Mason.

$4 MILLION EXPANSION FOR WESTINGHOUSE IN NEW ENGLAND

More than $4,000,000 will be spent at the Westinghouse Electric Appliance Division plant in Springfield, Mass., as the first step in an extensive expansion program, according to J. R. Weaver, plant manager.

"New tooling and rearrangement of the local plant not only will enable us to increase production of appliances already manufactured here,

but also will make it possible to make additional products and components formerly bought from other companies because of a lack of production space here," stated Weaver.

All Westinghouse motored appliances will be manufactured in Springfield, including fans, food mixers, vacuum cleaners, floor polishers, garbage disposers, water coolers, dehumidifiers and beverage dispensers. The manufacture of refrigerator units will be transferred late next year to the new Westinghouse refrigerator plant in Columbus, Ohio.

SEAPORCEL EXPANDS FACILITIES

Seaporcel Metals, Inc., of Long Island City, N. Y., has announced that Seaporcel Pacific, Inc., its Long Beach, Calif., affiliate, has leased a building adjoining the present plant that gives the company 15,000 additional square feet of floor space. Two more additions planned for the Long Island City main plant will boost this total to 165,000 square feet. The over-all program of expansion will cost more than $200,000, said M. Jesse Salton, president.

SHRADER, SCHNELL PROMOTED BY MIDWEST MANUFACTURING

L. H. Moos, general manager of Midwest Manufacturing Corp., Galesburg, Ill, subsidiary of Admiral Corporation, has announced the appointments of J. U. Shrader as plant superintendent, and M. D. Schnell to the new post of superintendent of ranges and enameling. Midwest produces Admiral refrigerators, ranges and freezers.

J. U. SHRADER

M. D. SCHNELL

Shrader has been with Midwest since 1939, and has been general foreman of the metal assembly department since 1945. Schnell joined Midwest recently after four years with Ferro Corporation as a sales and service engineer.

A. O. SMITH PRODUCING 65-GALLON WATER HEATERS

The Permaglas-Heating Division of A. O. Smith Corp., Kankakee, Ill., has begun shipments of its new 65-gallon automatic gas water heater, with model designation "PG-65". It will replace the present models PG-60 and PG-75, according to R. J.

Shepherd, manager of water heater sales. It was pointed out that the PG-65 takes 22 inches less headroom than the PG-75 on installation.

PRESSED METAL INSTITUTE NAMES TECHNICAL DIRECTOR

The Pressed Metal Institute, Cleveland, Ohio, recently announced the

appointment of R. W. Breckenridge as technical director in charge of PMI's new technical and engineering department.

A long-time resident of Cleveland, and fomerly president of Automatic Die and Products Co., Breckenridge has had wide experience in the stamping and tool and die industry.

As technical director, he will supervise the work of PMI's Technical Research and Standards Committee, Committee on Technical Papers, Committee on Quality Control, and the Safety Committee. He will also serve as editor of PMI's monthly engineering bulletin "Technical Topics" which will begin publication in January, 1954.

ELGIN, REFINITE UNITE

Refinite Sales Co., Omaha, Nebr., has joined forces with Elgin Softener Corp., Elgin, Ill., thus combining two of the oldest firms in the water conditioning business. Elgin was established in 1908 and Refinite in 1916.

The industrial water conditioning products and services of both companies are now being handled by a combined sales-engineering organization known as Elgin-Refinite, Inc., a newly-created division of Elgin Softener Corp.

EMERSON RADIO ACQUIRES QUIET HEET, SMALL NAMED EXEC. V. P.

Emerson Radio & Phonograph Corp. has acquired a majority interest in Quiet Heet Mfg. Corp., Newark, N. J., manufacturers of air conditioners and oil burners, it was announced by Benjamin Abrams, president.

John D. Small, chairman of the Munitions Board from 1950 to 1952, was elected executive vice president and a director of Quiet Heet, which will be operated as a subsidiary. Since 1952 Small was vice president of Pressed Steel Car Co., Inc.

REPUBLIC PRONOUNCES KITCHEN CABINET VENTURE A SUCCESS

Republic Steel Corp., which entered the kitchen cabinet market less than a year ago, has declared the

venture well on the road to success.

"Production, sales and general interest in Republic Steel Kitchens have soared far beyond our original expectations," said C. E. Howes, general manager for Republic's Berger Mfg. Div., in Canton, Ohio.

Howes asserted that turnout of Republic Steel Kitchens is seven times greater than the production a year ago of the former line of Berger kitchen cabinets.

EASTERN ENAMELERS TO TOUR U.S. STEEL FAIRLESS WORKS

Following their December 5 luncheon meeting at the Pennsbury Inn, Morrisville, Pa., members of the Eastern Enamelers Club will make a tour of the new Fairless Works of U.S. Steel Corp., near Morrisville.

RALPH BISBEE RECEIVES FREEDOMS FOUNDATION AWARD

At a special meeting in Columbus, Ohio, October 25, Ralph F. Bisbee, manager of quality control for Westinghouse Electric Corp., Mansfield, Ohio, was presented with a Freedoms Foundation Award.

The citation, made by Kenneth D. Wells, president of the Foundation, reads as follows:

"Freedoms Foundation at Valley Forge, Pennsylvania, hereby commissions Major General Albert E. Henderson, director of civil defense in the State of Ohio to present the Freedoms Foundation George Washington honor medal to Ralph F. Bisbee. The Foundation's directors authorize this honor award independently selected by the distinguished awards jury. The recipient is commended for devoted volunteer service and outstanding achievement rendered to the Civil Defense of the United States.

"Ralph F. Bisbee, chairman of the Disaster, Preparedness and Relief Committee

ASTM Committee C-22 — *on Porcelain Enamel met October 27 and 28 at the Armco Steel Corp. Research Laboratories, Middletown, Ohio. The committee discussed many tests for enameling industry, including: reflectivity, enameling iron, torsion, gloss, thermal shock and abrasion. The purpose of the committee is to establish standard tests for both the consumer and producer of porcelain enameled ware. Tentative tests are already in use on adherence, acid resistance, and warping.*

of Mansfield, Ohio, distinguished himself by this meritorious service by providing organizational and communication civil defense plans and directing his staff to employ them. Ralph F. Bisbee was directly responsible for the editing and publication of instructional manuals covering all activities of the Richland County Disaster Committee. He secured active personnel and trained them for survey, rescue, medical and communications work. As the volunteer director of the entire Richland County disaster program, Ralph F. Bisbee, has done much in defense of our Land of God and Freedom. Ralph F. Bisbee has strengthened America."

In commenting on the award, Mr. Bisbee stated "As we discussed before, this was made possible by a lot of wonderful cooperation of the people here in Richland County, and whether it is NST, ASTM or Civil Defense, it is simply a matter of Organization."

In addition to being quality control manager at Westinghouse, Mr. Bisbee is general chairman of the National Safe Transit Committee, and associate editor and technical consultant for *finish*.

TAPPAN NAMES KYLE GEN. MGR. OF MURRAY PLANT

Appointment of Verne O. Kyle as general manager of The Tappan

Stove Company's Murray, Ky., plant was announced by W. R. Tappan, vice president.

Kyle, in his 25th year of service with Tappan, had been serving as assistant general manager since November, 1952, at which time R. M. Lamb, formerly general manager, was placed in charge of Tappan inter-plant coordination.

MIDWEST ENAMELERS TO DISCUSS ENAMELING OF ALUMINUM AND HIGH TEMP. COATINGS

At the December 12 meeting of the Midwest Enamelers Club, at the LaSalle Hotel, Chicago, Don Goetchius, of Ferro Corp., will discuss "Equipment, Materials and Processing for Porcelain Enamel on Aluminum," and Jack Terry, of Hotpoint Co., will speak on "High Temperature Ceramic Coatings."

John L. McLaughlin, of *finish*, program chairman, said that it is also planned to have an aluminum company representative on the program.

AMERICAN BLOWER APPTS.

American Blower Corp., Detroit, has announced the election of J. C. Linsenmeyer as president, John W. Brennan, vice president-engineering; Wells A. Gardner, works manager; and A. F. L. Anderson, chief engineer. Linsenmeyer succeeds the late Clark T. Morse.

NEWS ABOUT SUPPLIERS

DeVilbiss equipment service school — *has been established primarily for personnel engaged in servicing the company's products, J. W. Cochrun, equipment service manager, announced. Curriculum includes courses in spray painting equipment, function and operation of the equipment, and advanced servicing techniques. Curtis R. Pipes is program advisor for school to be held in Toledo plant.*

ARMEL RETIRES AS NUBIAN SALES MANAGER FOR GLIDDEN

Nat Armel, a veteran of nearly 43 years of service with The Glidden Company, retired November 1 as sales manager of the Nubian Industrial Division, in Chicago. C. O. Hutchinson, former assistant sales manager and technical service director, was named Nubian sales manager.

Honored at a recent ceremony, Armel received an attractive scroll commending him for his contributions to the company. The presentation was made by A. D. Duncan, Glidden vice president and general manager, paint and varnish division.

Armel, 65, began his career in the paint business as private secretary to the president of Chicago's Nubian Paint & Varnish Co., possibly the country's oldest exclusively industrial paint manufacturing plant.

DETROIT BRASS & MALLEABLE LAUNCHES EXPANSION PROGRAM

Detroit Brass & Malleable Co. has launched a $500,000 expansion and improvement program to increase the capacity of their brass products plant in Detroit, it was announced by Charles Wiener, president.

It was stated that commitments have already been made for new foundry facilities and equipment and that the project, which will involve plant-wide improvements and the installation of new machinery, will be completed early in 1954.

U. S. STEEL NAMES MYERS TO PRODUCT DEVELOPMENT POST

Robert C. Myers has been named director of product development, U. S. Steel Corp., it was announced by David F. Austin, executive vice president – commercial.

In this newly activated position, he will be responsible for the commercial phases of product planning and the development of new products. Myers will also continue as director of market development.

EIGHT ARMCO STEEL PLANTS WIN SAFETY COUNCIL AWARDS

Eight plants of Armco Steel Corp. won safety awards at the annual congress of the National Safety Council, it was announced by C. M. Allen, Armco chief safety engineer.

Plants winning first place awards are located in Piqua, Ohio, Ashland, Ky., Des Moines, Iowa, and Salt Lake City, Utah. The Zanesville, Ohio, plant won a second pace award, while achievement awards went to plants in Middletown and Hamilton, Ohio, and Baltimore, Md.

FERRO WINS SAFETY COUNCIL "AWARD OF HONOR"

The National Safety Council announced that Ferro Corp.'s Cleveland plant was awarded the "Award of Honor".

Ned H. Dearborn, Council presi-

Left: Nat Armel receives a scroll from A. D. Duncan (left), Glidden vice pres., commending him for his work during 43 years of service.

Right: H. L. Gorman, president of Cleveland Safety Council, presents C. D. Clawson (right), Ferro, with "Award of Honor."

WM. FEW

OTIS JOHNSON

R. C. TREES

R. E. REYNOLDS

BURDETT BOGGS

R. E. SAGENDORF

dent, said the plant had both the lowest accident frequency and accident severity rates in the glass industries. Russell Frank is Ferro's safety director.

TANN NAMES JOHNSON SALES MGR. OF CONGRESS DRIVES DIV.

Herman Tann, president of Tann Corp., announced the appointment of Otis L. Johnson as sales manager of the Congress Drives Division, Detroit. His sales activities will be directed to users of V-belt drives and die castings.

SWANSON TO UNION STEEL WIRE DIVISION POST

John I. Swanson has joined the staff of Union Steel Product Co.'s Wire Products Division, Albion, Mich., as sales-engineer. He will be responsible for research, development and fabrication of wire and tube-type products for the refrigeration industry.

DETREX NAMES SAGENDORF ASSISTANT TO SALES DIRECTOR

Detrex Corp., Detroit, has announced the appointment of Rodney E. Sagendorf as administrative assistant to W. F. Newbery, director of sales.

For two years, Sagendorf has been chief of the chlorinated solvents section, chemical division, National Production Authority. He had been the company's Ohio representative before joining NPA.

ROWE HEADS INDUSTRIAL, PUBLIC RELATIONS FOR BINKS

Burke B. Roche, president, Binks Mfg. Co., Chicago, has announced the appointment of John E. Rowe as vice president in charge of industrial and public relations.

Rowe had been assistant to the president with government contracts and advertising as his responsibilities. These activities will remain under his supervision.

PENN CONTROLS CHIEF ENGINEER

William Few has been appointed chief engineer at Penn Controls, Inc., Goshen, Indiana, it was announced by Ralph S. Penn, executive vice president. Few will be responsible for Penn's expanded research and product development program.

TREES TO NEW UDYLITE POST; REYNOLDS NAMED SALES ENGR.

Lawrence V. Nagle, executive vice president of Udylite Corp., Detroit, has announced the promotion of Robert C. Trees to the new post of director of advertising, sales promotion and market research.

Russell E. Reynolds was named sales engineer in the Pennsylvania district, with headquarters at Udylite's Cleveland office.

ING-RICH PROMOTES BOGGS

Burdett Boggs has been named southern frit representative for Ingram-Richardson, Inc., Frankfort, Ind., it was announced by R. H. Coin, president. Associated with Ing-Rich for 20 years, Boggs recently was plant superintendent. He will headquarter at Shelbyville, Tenn.

RANSBURG NAMES SALES ENGR.

Ransburg Electro-Coating Corp., Indianapolis, has named Reno Offringa as sales engineer for Michigan and Northern Indiana, with temporary headquarters at Spring Lake, Mich.

STOTSENBURG TO HEAD SALES FOR ROBERTSHAW FIELDEN DIV.

Ralph V. Coles, assistant vice president, Robertshaw-Fulton Controls Co. and manager of the Fielden Instruments Division, has announced the appointment of R. M. Stotsenburg as sales manager of the Fielden division.

GILLETTE HEAD TO U.S.S. BOARD

Benjamin F. Fairless, chairman, U.S. Steel Corp., has announced the election of Joseph P. Spang, Jr., president of Gillette Co., to the board of directors, succeeding the late Nathan L. Miller.

AMERICAN NICKELOID MOVES NEW ENGLAND SALES OFFICE

The New England sales office of American Nickeloid Co., of Peru, Ill., has been moved from Beverly, Mass., to 250 Boylston St., Boston 16, Mass. John F. Schoellhorn continues in charge of the office.

J. I. SWANSON

RENO OFFRINGA

J. E. ROWE

R. M. STOTSENBURG

AMERICAN CHEMICAL PAINT INTERNATIONAL MEETING

Chemical manufacturers from 42 nations met recently at an international convention sponsored by American Chemical Paint Co., at ACP's plant in Ambler, Pennsylvania.

Government representative involved, and the speakers from various colleges, were said to have been pleasantly surprised at the nature of the convention, in which a great variety of enterprises on six continents exchanged ideas.

Of interest to metal product manufacturers were sessions on the use of chemical compounds in metalworking. Topics included acid cleaning; alkali cleaning; inhibitors, development, testing; inhibited pickling in production; phosphate coatings; drawing compounds; anodizing; equipment for ACP processes; and the painting of metal.

SHERWIN-WILLIAMS UPS BENSON AND DAVIS

Dr. S. R. Benson has been appointed director of dry color research, and R. W. Davis named superintendent of dry color production, it was announced by M. B. Doty, superintendent of the dry color department, The Sherwin-Williams Co. Both men have been employed in the department since 1936.

CLEVELAND CRANE ENTERS HEAVY PRESS FIELD

The Cleveland Crane & Engineering Co., Wickliffe, Ohio, has announced its entry into the heavy press field with the introduction of a completely new line of presses ranging from 160 tons capacity and up.

The new machines, to be known as Wickliffe presses, will supplement the Steelweld bending press and shear lines which were developed and introduced by the company many years ago.

It was stated that complete lines of single, two and four point, single-action presses, have been developed.

HOLMBERG HEADS SALES FOR INLAND STEEL

Inland Steel Company, Chicago, has annonnced the appointment of Clarence L. Holmberg as general manager of sales.

Kalamazoo Furnace & Appliance holds open house

AN OLD traditional name in the appliance industry was officially revived October 23 when the Kalamazoo Furnace & Appliance Mfg. Co., Kalamazoo, Michigan, held an open house for more than 300 dealers, distributors and friends.

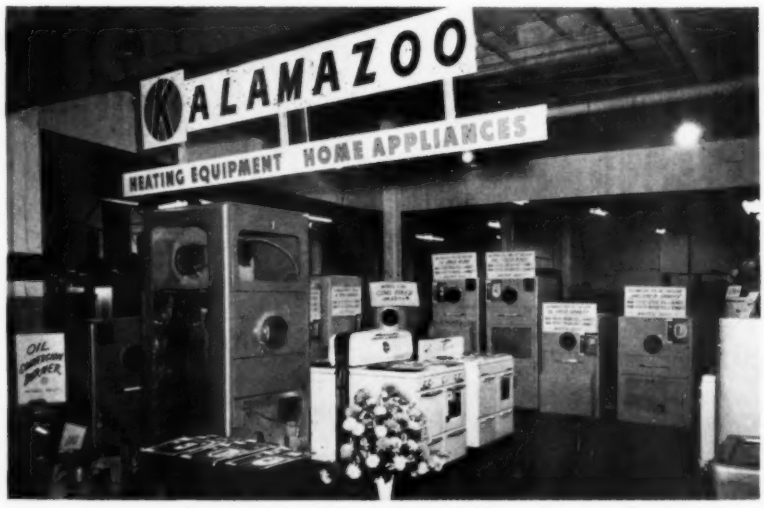
The newly-founded company displayed its line of 24 furnaces along with a complete line of electric and gas ranges, water heaters, and gas and oil conversion units. The plant occupies 50,000 square feet of space in the north section of the former Kalamazoo Stove & Furnace Co. Headquarters are located in a newly-erected office building.

The new firm purchased the assets of the stove and furnace company last February, with initial manufacturing work begun more than five and one-half months ago.

Heading the host group at the open house was C. C. Whitcomb, president. He had joined the older firm in 1928 as a sales representative, and rose through the ranks to become vice president and general manager.

Other officials include: Wayne Young, vice president; Milton Bailey, treasurer; James Thomas Sloan, Jr., secretary; C. A. Montague, sales manager; Fred De Young, purchasing agent; and H. J. Gernaat (with the stove firm for 18 years), plant manager.

Above: l. to r., Fred De Young, purchasing agent; C. C. Whitcomb, president; and J. H. Gernaat, plant manager. Below: A view of the firm's line of products.



NEMA meeting

→ *from Page 61*

ing at an all-time high, with record-breaking employment and income figures and production records making those of a few years ago look ridiculous by comparison, every indication points to 1954 as a championship year, according to a NEMA spokesman.

As a consequence, the educational and promotional programs of NEMA Appliance Sections will be pushed more vigorously than ever in 1954. With the construction of new homes continuing in large volume, advertising designed to acquaint the architect and builder with the benefits of electric appliances installed at the time of building, will be continued and amplified. The ever-important replacement market will be covered through various means of advertising and promotion — some direct to the trade, as in campaigns aimed at plumbers on electric water heaters, others indirectly through educational material and advertising directed to home economics teachers and school management officials.

At the meeting, the keynote was what the NEMA Major Appliance Sections can do to coordinate and supplement the individual advertising and promotional efforts of its members and other industry groups. Such industry-wide effort helps each member company by promoting the installation and use of electric appliances for time and labor saving, and increased efficiency in homemaking.

A number of new promotion aids were presented at the meeting, including an "Electric Range Visual Aids Teaching Kit" for distribution to school home economics teachers for classroom use. It includes 10 wall charts, printed in full color, with accompanying "Teaching Guide." This kit promises to be more widely used than the one on "Home Freezers" produced last year and already placed in over 15,000 schools. The range kit provides a complete visual course in cooking with an electric range, and offers the kind of help that teachers have needed on this subject, but which they have never had in such complete and comprehensive form.

Electrostatic spraying of chair seats & backs

→ *from Page 41*

of spray—no spray booth—no water-wash walls and tank—no mask on the operator. Instead, the atomized paint particles are so fine, the spray pattern is scarcely visible. One sees only the work change color gradually as it moves into the electrostatic spray field—emerging with a full coat of enamel as if by magic.

No compressed air is used in the all-electric unit. Paint is metered to the bell-shaped atomizers by means of positive-displacement type pumps —set to deliver the amount required by the operating conveyor speed. Rotation spreads the paint uniformly over the surface of the atomizer to their outer edges. A source of electrostatic high potential, having one terminal connected to the atomizing bells, creates a strong electrostatic field between the atomizers and the chair seats and backs, which are electrically grounded through the workholders and conveyor. The field changes the paint into a spray of finely atomized, charged particles, creating an attraction that "pulls" the paint to the work.

NOTE

Plant men consulted on the subject of this article, other than the author, include:

O. R. Bridges, general plants mgr.
Don Keller, plant superintendent
Roy Stepp, finishing foreman
Glenn Wintermute, engineering

The operation eliminates "overspray." It also reduces the requirement for make-up air. Ventilation of the area effectively removes solvent vapor that escapes from the wet paint as the work travels to the baking oven.

A gas-fired, infra-red oven completes the job, the work being subjected here to 300° F. for 16 minutes.

Production now averages 1200 parts per hour, using 27 gallons of paint per hour. We are getting 23 units (seat and back) per mixed gallon of paint.

Changes are planned to make the operation even more efficient. We are still using the same conveyor set-up used in the previous method; so as soon as schedules permit, 200 feet of unnecessary conveyor travel will be eliminated which will provide some much needed floor space.

Paint, varnish, lacquer industry meeting

→ *from Page 71*

plastisols to produce a finish that is 100% non-volatile. We can see the economies in this type of finish because of the savings in not using volatile materials."

Coupled with solvent economy, Guthman pointed out, a vehicle that is being given attention uses water as its carrier. "Work has been done on this, and while there are many problems still to be encountered, the manufacturer of this material feels that it will be a matter only of months

before trial materials are available for testing. As the evaporation rate of water is slow, a method has been worked out that will use a gun, which as it delivers material, flame will be used to carry away the water. This resin has claims that it will produce a finish which will give improved gloss, durability and adhesion."

He mentioned another interesting type of material which will be available — the products of the trifluoromonochloroethylene resins. "Our increasing knowledge of methods of handling dispersion-type resins will enable us to use resins of that type," predicted Guthman. He pointed out that these resins make it possible to produce coatings that are practically impervious to the action of corrosive chemicals and highly-resistant to most organic solvents. They were said not to be affected by prolonged exposure to weak and concetrated acids, strong and weak caustics, and vigorous oxidizing agents. Claims are made that these coatings will withstand a temperature range of well under freezing to 390° F. Water transmission tests have been conducted to show practically a zero moisture transmission rate.

Trend to more automatic equipment

Along with the development of new materials, there will be advancements in the area of equipment for industrial finishing.

Guthman predicted an increased use of automatic painting equipment. "There has been and will continue to be a more extensive use of electrostatic equipment, which reflects economies in the use of materials and labor. As a consequence, many additional companies have entered the field of manufacturing electrostatic equipment, and there are interesting possibilities that they talk about for the future."

New interest has been increasing in high pressure spraying, which is sometimes called airless atomization. This renewed interest, Guthman pointed out, is due to the fact that a better break up of materials is accomplished by combining the heating of materials with its applications at high pressures. "Some of the advantages that are being claimed for this method are the elimination of compressed air and reduction in the amount of overspray . . . and also in the maintenance and housekeeping of spray booths.

"These, of course, present the problems that materials must be made to fit this new equipment; and along with the equipment advances is the possibility that we will have catalysts to promote quick drying. This will offer considerable economy in reducing the amount of drying equipment necessary and will speed up the time of the finishing of the article and its availability for final shipment.

"Also, we must not forget that while some of these things have been new and spectacular, there has been a continual improvement in conventional equipment," said Guthman.

A blueprint in action

In his address, Hager pointed out that for the past six years, the steer-

ing committee of the Industrial Product Finishes Division has promoted its "blueprint in action," and for the past two years, it has been conducting seminars on a management level, all for the purpose of disseminating facts and information to help the members of the industry better discharge their responsibility.

"We have accepted the fact that our customer's best interest is a responsibility of ours. We recognize that we can only discharge that responsibility through good customer relations, through constant improvement of our products, and our services," emphasized Hager.

Cermets—possible answer to ultra-high temps.

(Continued from Page 38)

differences in their atomic radii. Nitrides and carbides of the metals, whose crystalline structure and atomic radii are similar to the ceramic oxide, are therefore used, thus forming a solid solution with the ceramic oxide. An example of this are the chromium-alumina cermets. The oxide of chromium oxide goes into solid solution with alumina, with the refractory properties of almina being retained.

Control techniques and manufacturing procedures needed to achieve inter-granular adherence and strength in cermets varies with the final properties desired, the design of the piece under study and the composition of the ceramic metal composite. Special equipment is also required for the processing and testing of cermet bodies.

Allied to powder metallurgy

The techniques used in the making of cermets are similar to powder metallurgy. In general, the constituents of the cermet are ground very fine, the powders being carefully selected for highest purity. The metal and ceramic powders are then intimately mixed and hydrostatically pressed in a die to the desired shape. Waxes, or other compacting lubricants, are often added for strength and die lubrication. If lubricants are used, a de-waxing process is necessary prior to sintering. The cermet body is sintered at high temperatures in special furnaces such as molybdenum-wound, resistor furnaces. The sintering atmosphere is usually neutral or reducing. Sintering atmosphere must be accurately controlled for uniform results. The sintering range of the cermet is a function of the fineness of metal in the body, the amount of impurities (which lower the sintering range), pressure used in forming, rate of heating and type of sintering atmosphere used.

The sulphides, borides, nitrides and carbides are usually used to provide a continuous bond between the ceramic oxide and the metals since the atomic radii of metals are such that direct chemical combination of a metal with a ceramic oxide other than its own is rare. Therefore, intermediary compounds are used, whose crystal structures and atomic radii are similar to ceramic oxides, to allow the combination of dissimilar components.

Technical investigations

Examples of this theory are MgO-TiN-NiO cermets, investigated by Rutgers University, in which titanium nitride is used to promote metal wetting during sintering the magnesium and nickel oxide to nickel metal, and then ground and mixed with titanium nitride. Upon further sintering, titanium nitride promotes a bond between the metallic phase, the nickel metal formed during sintering and the ceramic magnesium oxide.

Another illustration is chromium-alumina bodies, investigated by Ohio State University. The chromium oxide, created in the sintering, forms solid solutions with alumina and wets the chromium metal grains. In this case, an oxide of the metal is the intermediate bonding component.

The most refractory ceramic coating is generally considered limited to temperatures of approximately 2000° F. Ceramic coatings commonly used have a softening point below that of the metal which it protects. However, if the coating has a softening point above that of the metal, it is possible to obtain a condition where the underlying metal melts away, leaving the ceramic coating intact.

Some cermet coatings have their plastic stage and melting point 2000° F. above the melting point of the metal to which they are applied. Cermet coatings are from 50 to 75 per cent powdered metal, by weight. This bonds the refractory ceramic oxide into a homogeneous coating and bonds the coating to the base metal. The cermet composition is re-ground after sintering and applied to the metal surface by various techniques such as flame spraying, sintering in an atmosphere-controlled furnace or by torching after cold application.

A promising new technique, investigated by Battelle Memorial Institute, is the vapor deposition process. By this means, metal halides have been applied to metal, glass or ceramic bases at temperatures lower than 1500° F. Practical commercial uses for this process, which is still in the laboratory stage, are many.

Through the combined efforts of the ceramist, the engineer and the

Comparison of Properties Between Metal and Several Classes of Ceramics

Material	*Refractoriness*	*High Temp. Strength*	*Ductility*	*Thermal Shock Resistance*	*Stability*	*Oxidation Resistance*
Metals	Poor	Poor	Good	Excellent	Good	Poor
Oxides	Good	Good	Poor	Poor	Excellent	Excellent
Carbides	Excellent	Excellent	Poor	Fair	Excellent	Poor
Borides	Excellent	?	Poor	Fair	Excellent	Fair
Nitrides	Good	?	Poor	Fair	Fair	Fair
Silicides	Fair	?	Poor	Fair	Fair	Good
Sulfides	Good	?	Poor	?	Good	Poor
Phosphides	Fair	?	Poor	?	Fair	Poor

(From "Metal-Ceramic Composites" by J. H. Westbrook, Bulletin, American Ceramic Society)

Huyck Masonry service is complete . . . . includes all necessary materials. At left is a continuous furnace under construction (note special tongue and groove bricks), and above, a view of the completed masonry.

FIREBRICK MASONRY is no job for amateurs!

HUYCK BUILDS, REBUILDS, REPAIRS ALL TYPES OF:

ENAMELING FURNACES . . . FRIT SMELTERS . . . ALUMINUM, BRASS, LEAD SMELTERS . . . FORGE FURNACES . . . HEAT TREATING FURNACES.

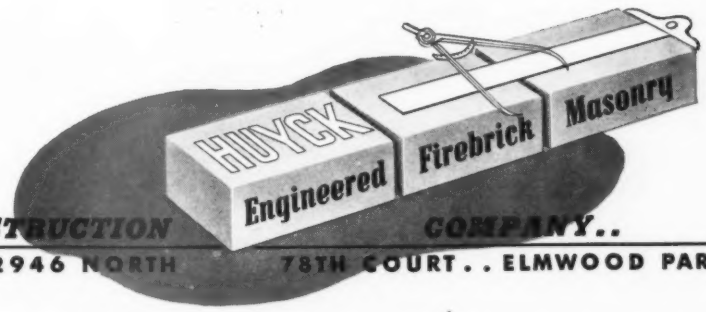
HUYCK *LINES AND RELINES MILLS*

HUYCK MEANS MASONRY

The pressure of keen competition in modern day business leaves no room for waste. That's why industry gets its jobs done by men who know how to do them best.

Firebrick masonry is a typical example of a specialized type of work. It requires the skill of experienced masons. And Huyck masons have that skill. For over a quarter of a century, Huyck has been doing an outstanding job in engineering masonry work for industry. Enameling furnaces, heat treating, forging and annealing furnaces, mill lining work, and smelters are just a few of the jobs we've done. The fact is that, no matter what type of masonry construction is needed, Huyck is equipped to do the job quickly, efficiently and reasonably.

HUYCK *MASONRY IS GUARANTEED TO GIVE YOU BETTER PERFORMANCE AND LONGER LIFE*



Huyck CONSTRUCTION COMPANY..

2946 NORTH 78TH COURT . . ELMWOOD PARK 35, ILLINOIS

designer, full utilization of jet propulsion and nuclear energy is close at hand. The developments in the high temperature field today will ultimately result in a greater industrial advancement, and a higher plane of civilization in the world of tomorrow.

NESCO ACQUIRES DULANE

Nesco, Inc., Milwaukee, has entered into a preliminary agreement for the purchase of Dulane, Inc., manufacturers of electric Fryryte fryers, it was announced jointly by R. L. Purcell, executive vice president of Nesco, and Robert Dusek, president of Dulane.

Under the agreement, Dusek will continue in charge of the Dulane operation, and will maintain headquarters at the Dulane plant in River Grove, Ill.

Westinghouse starts refrigerator production in new plant

at rated capacity the largest manufacturing plant ever built by Westinghouse will produce approximately 4000 major appliances a day

COMPLETION of the first refrigerator at the new $45,000,000 Westinghouse Electric Appliance Division plant, in Columbus, Ohio, on November 12, officially marked the production debut of the largest plant that Westinghouse Electric Corp. has ever built.

Although construction in some areas of the vast plant, which contains 2,000,000 square feet of floor space, has not yet been completed, a limited amount of production has been started by a small force of 500 workers. Eventually, the plant will employ between 6000 and 7000 workers, and will produce approximately 4000 major appliances a day, most of which will be refrigerators and freezers.

"When completed and operating at full capacity, this new plant will represent a substantial increase in the total annual production of Westinghouse appliances," stated John Ashbaugh, vice president. "The beginning of production at this plant is something we have long awaited," he continued, "as we have been operating our appliance plants in Mansfield, Ohio, and Springfield, Mass., at top capacity and have greatly felt the need to expand our operations." *(See news story on Page 75 concerning $4,000,000 expansion plans for Westinghouse in New England.)*

First refrigerator off the assembly line at the new Westinghouse appliance plant in Columbus, Ohio, is crated at the end of the line. George Meilinger (right), manager of the refrigeration department, and E. L. Smith, works manager of the new plant, look on.

The new plant, located on a 315-acre site just outside the Columbus city limits, is a one-story type factory building extending almost half a mile in length.

Daily — 50 carloads received, 90 carloads shipped out

Approximately six miles of railroad sidings lead into the plant, and over these rails each day, when the plant is operating at maximum production, approximately 50 carloads of supplies will be brought into the plant, and 90 carloads of completed apparatus will roll out.

The plant contains four manufacturing aisles, each 200 feet wide and extending approximately 1500 feet. These aisles lead in a straight-line production pattern to the warehouse area with a storage capacity of 100,000 major household appliances.

27-mile long conveyor system

Assembled and crated on the line, the first refrigerator produced was hoisted into the air by a conveyor, a part of the plant's 27-mile long conveyor system, and carried over the heads of spectators, through an opening at second-story height and into the warehouse.


December · 1953
safe transit
FROM ASSEMBLY LINE TO FINAL CUSTOMER

Acme Steel Strapping Insures S.A. *(Safe Arrival)*

and eliminates Crating Department bottleneck for Hotpoint!

"BEFORE" HOTPOINT RANGE PRODUCTION LINE STALLED. Hotpoint workers found the hand stretcher method (shown above) too awkward in fastening corrugated board for shipping protection to new ranges as they poured off the production line. The line kept backing up.

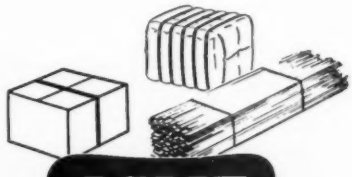
"NOW" ACME STEEL PNEUMATIC STRETCHER ELIMINATES BOTTLENECK, CUTS COSTS! The same workers now tension pre-cut Acme Steel strapping with an Acme Steel pneumatic stretcher. Shipping preparation costs have been held as much as 20 per cent below normal industry shipping costs. One operator says, "A man couldn't last all day before—too hard on the arms. Now with the Acme Steel system it's easy to keep ahead of production."

There it is. A clear cut case of how Acme Steel and know-how in steel strapping has helped a leading manufacturer solve a critical problem.

Chances are that many of your own production assembly or packing and loading problems can be cleared up with Acme Steel strapping, the best way to protect your product in shipment.

You will also learn that Acme Steel strapping, and the Acme Steel tools that work with it, will save materials and pay for themselves in a short time. Employees are happier because they know increased production means more, steadier jobs.

There are dozens of cases in the files to prove that nearly everything made to eat, wear, sit on or live in can be assembled and packed swiftly and will arrive safely with Acme Steel strapping. For specific examples, write to Acme Steel Products Division, Dept. F123.



ACME STEEL

ACME STEEL COMPANY

2807 ARCHER AVENUE, CHICAGO 8, ILL.

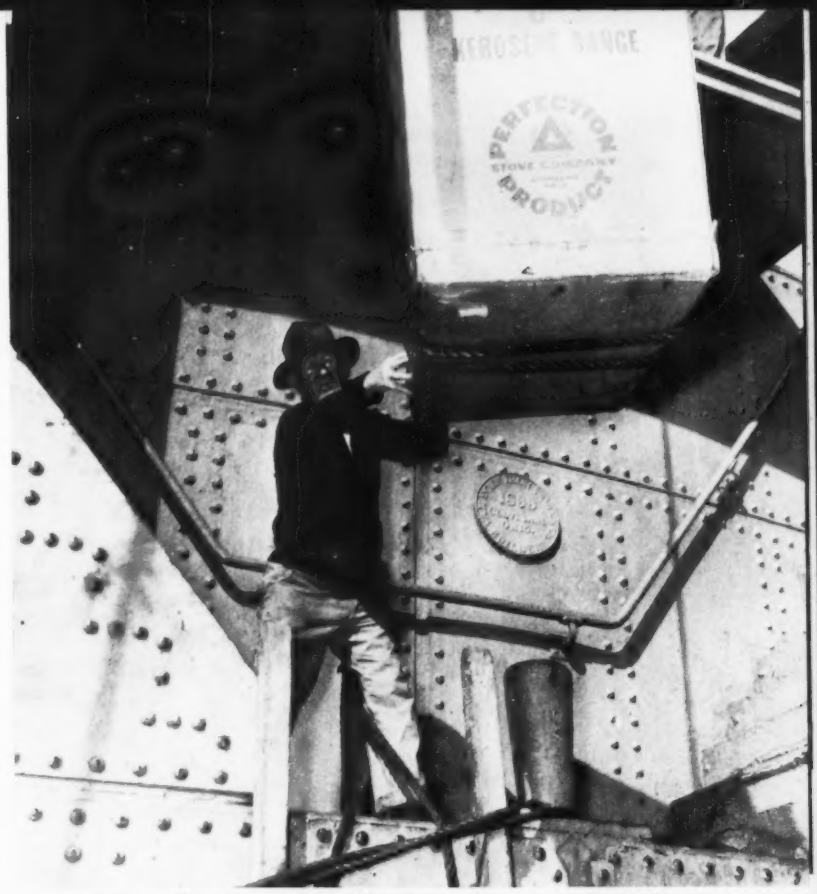
safe transit

A monthly trade publication section devoted to improved packaging and shipping and materials handling practices in the home appliance and metal products manufacturing field.

Plant experience information for all executives and plant men interested in the problem of packaging and shipping improvement and loss prevention.

Complete information on the National Safe Transit pre-shipment testing program for packaged finished products, and detailed progress reports of divisions and sub-committees of the National Safe Transit Committee.

CONTENTS



Proper packaging paid dividends — *when a new Perfection kerosene range was delivered to the Crib, four miles out in Lake Erie. An orange circle of steel, the Crib, which pumps water to the city of Cleveland, rises 27 feet above Lake Erie's pounding waves. Delivery of the range had to be made from a bobbing launch, up the steel sides of the Crib. The report states that the transfer from launch to Crib was effected with nary a bump or scratch on the enamel surface of the range.*

Industrial packaging show — *in Boston was the setting for this photo, showing a chivalrous driver of an industrial truck taking a pretty model on a tour of nearby exhibits. For a complete report on this exposition,* *turn to Page ST-5.*

Put A Gaylord Man On Your Team... It Pays Off In Reduced Packing Costs

One manufacturer is saving 75% in packing costs and 55% in container weight with his new Gaylord-designed "package".*

Your savings may not be as great . . . but a Gaylord man, working with management, design, production and purchasing, is almost certain to come up with cost-cutting suggestions for tough packing problems.

Look in the classified pages of your phone book under "Boxes (Gaylord)" for the Sales Office nearest you.

Name and address on request.

Gaylord Boxes

Their seen and unseen quality gives you an extra margin of safety.

GAYLORD CONTAINER CORPORATION

General Offices: ST. LOUIS • Sales Offices Coast-to-Coast

CORRUGATED AND SOLID FIBRE BOXES • FOLDING CARTONS • KRAFT BAGS AND SACKS • KRAFT PAPER AND SPECIALTIES

Shown at formal opening of exposition, left to right: Earl B. Candell, of General Electric, new SIPMHE president; Lt. Gov. Sumner G. Whittier; Stanley Price, of Western Electric, Chicago, retiring SIPMHE president and new chairman of the board; and Paul O. Vogt, of General Electric, retiring board chairman.

Industrial packaging, handling show held in Boston

first show of its kind held in New England is pronounced a big success

THE eighth annual Industrial Packaging and Materials Handling Exposition and the concurrent Competition and Technical Short Course were conducted the week of October 19, in Boston's historic Mechanics Hall.

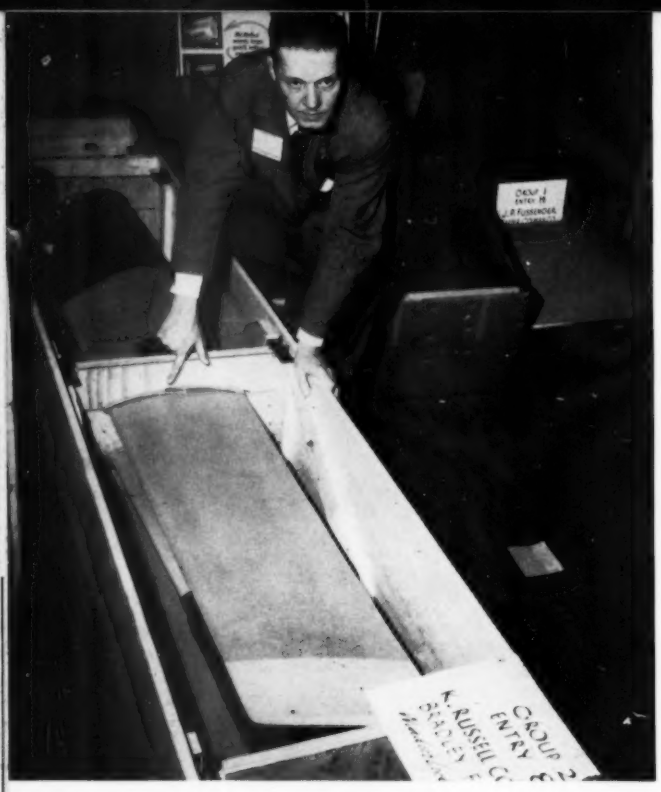
Chicago headquarters of the Society of Industrial Packaging and Materials Handling Engineers, which yearly presents the triple feature event of the protective packaging and materials handling world, said registered attendance at the exposition was over 7100 persons and that the technical Short Course directed by the Mechanical Engineering Department of the Massachusetts Institute of Technology was attended by upwards of 500 registrants.

"While these figures were somewhat less than those recorded at the record-making exposition and Short Course in Chicago in 1952," said C. J. Carney, Jr., managing director of SIPMHE, "they exceeded our expectations and are especially impressive because of the type of persons who participated.

"The higher echelons of industrial executives were represented in greater numbers than ever before, both in the Short Course and among the exposition visitors. Geographically, Short Course registrants ranged from Finland to California. Nearly every state was represented.

"We are confident that the analysis of registrations, which will be published as soon as it is completed, will show that the 1953 exposition and Short Course attracted an unprecedented high percentage of policy- and decision-making executive personnel."

The SIPMHE-sponsored exposition was the first major industrial packaging and materials handling show



The Harold Jackson Award and first prize in Group 2 (nailed wood boxes and crates) of the protective packaging competition was won by K. Russell Colcord, packaging engineer, Hamilton Standard Division, United Aircraft Corp. The Jackson award given annually by Wm. McGee & Co., New York marine underwriters, was made this year for the export package offering the most satisfactory method of product protection against corrosion. This box is packed with an airplane propeller.

ever to be presented in Boston or New England. The industries and commercial enterprises of the area were generously represented among the visitors.

The annual Protective Packaging and Materials Handling Competition was also a drawing card. The entries in the seven different divisions of the competition were so excellent and varied that the panels of judges were reported unable, in some cases, to reach their decisions until just before the 12 o'clock noon deadline on Tuesday, October 20, when the exposition opened. Groups No. 1, for corrugated or solid fibre boxes, and No. 3, for wirebound boxes and crates, attracted the largest number of entries. First, second, and third prizes were given in each group, except that for export packages, which drew only four entries. Only a first prize was awarded in the export group.

Even before the 1953 exposition was over, plans already were afoot to make the 1954 competition an even greater headline event than it already is.

"The annual Protective Packaging and Materials Handling Competition originated by SIPMHE has attracted the attention of protective packaging and materials handling specialists all over the world and has been copied in several foreign countries," Carney said. "It provides the only means for the serious-minded packaging or materials handling engineer to pit his professional skill against that of others in his field. We already have a program to make the 1954 Competition greater than any previous Competition in all divisions. Our plans will be announced to industry and commerce when they are completed, but we can state categorically now that the 1954 Protective Packaging and Materials Handling Competition definitely will be an outstanding event and one to which all engineers can look forward."

The Irving J. Stoller Award and third prize in Group 1 (corrugated or solid fibre boxes) was won by Earl K. Gustin, packaging engineer, Bendix Products Division, Bendix Aviation Corp. The Stoller award is given annually by Irving J. Stoller, president of Fibleco-Illinois Corp., for the most notable development in interior packing.

A challenge to the packaging engineer

At the Short Course session, sponsored by SIPMHE in cooperation with the Massachusetts Institute of Technology, Earl B. Candell, of General Electric's Lamp Division, and newly-elected president of SIPMHE, presented an address entitled "Challenge to the Packaging Engineer."

Packaging is the fourth largest industry in the country today, said Candell, but it probably is the least organized educationally. "We have a real challenge to go out and develop this work — but first we must be prepared ourselves—then see that others are trained."

Candell stressed his point that the packaging man "who knows his stuff", who understands the principles and can and will think in aggressive terms, has a tremendous field to work in.

"The real problem", he pointed out, "is getting the packaging man to go out and do a job. To get him to truly qualify as a *packaging engineer* — one who operates on facts and knowledge. We as packaging men have a tremendous field to work in. Few things have had such an impact on our way of life as has packaging in recent years.

"We have a challenge to develop both as individuals and as a profession. A challenge to raise our work to a recognized professional plane. We have a useful job to do, a service to perform. May we recog-

nize that challenge, and may this year be one of progress and advancement," concluded Candell.

Partitions, pads for appliance protection

H. R. Wilson, package engineer for The Firestone Tire & Rubber Co., told his short course audience about "Partitions and Pads."

This type of packaging, Wilson emphasized, in many cases determines the success or failure of a package to deliver the goods to the customer. Impact shocks must be stopped before they contact the contents of a package, and where the product is one of breakable material, extreme care must be taken.

Wilson warned that the customary markings on the exterior of a container are not necessarily assurance that the package will be set upright or in the position marked. *"You must rely upon the protection you have engineered into the package to furnish the protection needed,"* he stated.

Why partitions and pads are needed

"The finish on refrigerators, stoves, washing machines, or other products having a high gloss and slick surface, can be marred by abrasion in shipping and scratched so badly that complete refinishing may be necessary. The puncturing of a container by some object—such as a nail, bolt, or other protruding freight — may damage the contents; thus, a space should be provided between the wall of the container and its contents.

"The irregular shape of many items do not permit supporting surfaces to help the container withstand warehousing and shipping — *thus the partitions and pads enter into the picture of packaging*," stated Wilson.

Function of protective packaging

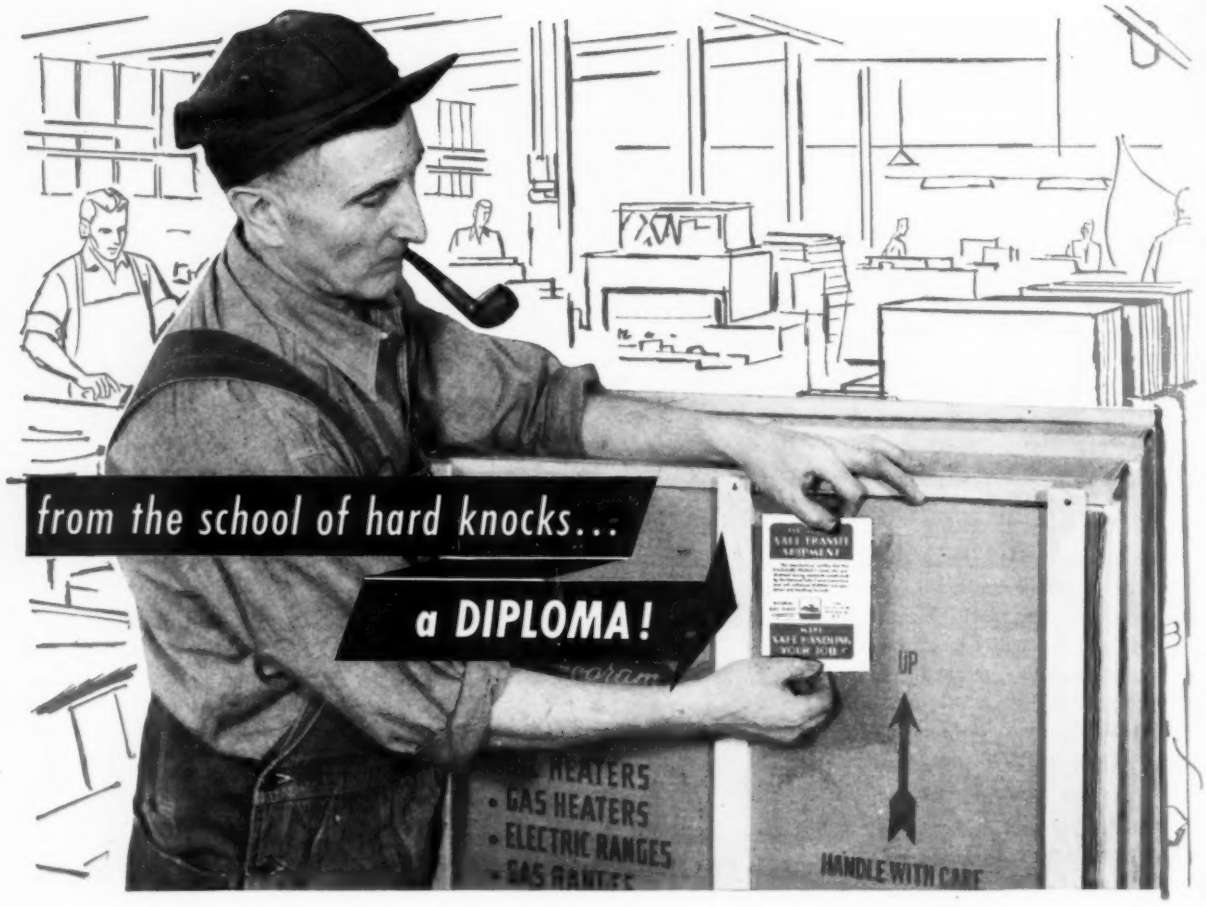
In his address on the "Principles of Cushioning", John L. Gretz, packaging engineer for The Sponge Rubber Products Company, included a discussion on the "function of protective packaging."

"The package has the function to insure safe arrival of a product to the consumer. Because a shipment is rarely direct (using only one carrier), the varied types of transportation and many transfers involved in loading, unloading and classification between carriers result in many opportunities for the damaging blows, drops or impacts classified as shock, whereas excessive vibrations which normally are damaging to a lesser degree are experienced by the carrier," Gretz explained.

It has been estimated by some experts, Gretz continued, that " a domestic shipment receives on the average ten handlings in transit from manufacturer to consumer, while studies based on instrumented packages by the *National Safe Transit Committee* have definitely shown that the number of damaging shocks occur much more frequently during handling operations than in actual transporting of the product in all types of carriers." →

R. L. Brandes (left), supervisor of shipping and warehousing, General Electric Co., Pittsfield, Mass., and his predecessor, S. E. "Sid" Fenton (right), now retired, held a reunion in Wirebound Box Manufacturers Association booth. With them are L. S. Beale, WBMA secretary and new vice president of SIPMHE, and E. F. Gallivan, WBMA assistant secretary.

In National Wooden Box Association booth are Robert F. Miles (left), of Rathborne, Hair & Ridgway Box Co., and president of National Wooden Box Association. Miles presented the awards to the winners in Group 2 (nailed wooden boxes and crates) of the packaging competition.



and another sagging market gets a boost from General Packaging Laboratories

Quincy Stove Company, Quincy, Illinois, faced an actual drop in sales when their Monogram Oil Heaters started arriving at dealers' in a damaged condition. They presented their problem to General Box Company Engineers. Results:

- A Watkins-Type container, specifically designed to withstand heavy punishment and meet Pre-Tested Safe Transit Standards, was developed.
- The product itself was tested on General Box Company's exacting laboratory equipment; improved design corrected cause of failure.

In the three years since the changes were made, Quincy Stove Company's damage in shipment claims have totaled less than $200.00. This is only one among many packaging problems solved every day—at a saving—in General Box Company's two fine Industrial Packaging Laboratories.* Let us help *you* cut packing and shipping costs. Write today for full information.

For More Cost-Cutting Ideas, Write for your Free Copy of "The General Box."

*General Box Company Laboratory facilities are certified to make "National Safe Transit" tests.

General Box COMPANY

★ ★ ★ ★ ★

1823 Miner Street
Des Plaines, Ill.

Factories: Cincinnati; Denville, N. J.; Detroit, East St. Louis, Kansas City, Louisville, Milwaukee; Prescott, Ark.; Sheboygan; Winchendon, Mass.; General Box Company of Mississippi, Meridian, Miss.; Continental Box Company, Inc., Houston.

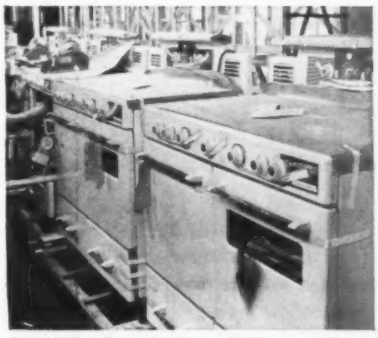
Engineered Shipping Containers for Every Shipping Need

Wirebound Crates and Boxes • All-Bound Boxes • Generalift Pallet Boxes • Cleated Corrugated and Watkins-Type Boxes • Corrugated Fiber Boxes • Stitched Panel Crates

Even Bronko Nagurski, former All-American fullback and now professional wrestling star, can't break it!

World's strongest tape?

Super-strong, shock-resistant "Scotch" Brand Filament Tape cuts damage claims, speeds shipping of household appliances



STOVES: "Scotch" Brand Filament Tape holds doors, drawers and control knobs *tight* during shipment, yet doesn't scratch glossy baked-enamel finish. Tape adhesive absorbs shocks.

WASHERS: "Scotch" Brand Filament Tape grips wringer parts for shipping where usual banding materials couldn't possibly be used. Tape leaves no adhesive residue. No disposal problem.

DRYERS: "Scotch" Brand Filament Tape prevents jarring and cracking of doors and other loose parts. Tape has tensile strength of up to 500 lbs. per inch of width, is easy and quick to apply.

SHIPPING ROOM: "Scotch" Brand Filament Tape reinforces corrugated containers used for heavy appliances. Cost comparison proves tape saves over regular banding methods. In many cases short strips will do the job.

MINNESOTA MINING & MFG. CO.
DEPT. F-123, ST. PAUL 6, MINN.

Please send complete facts on "Scotch" Brand Filament Tape, plus a sample roll for testing.

NAME.....

FIRM.....

ADDRESS.....

CITY.....ZONE...STATE.....

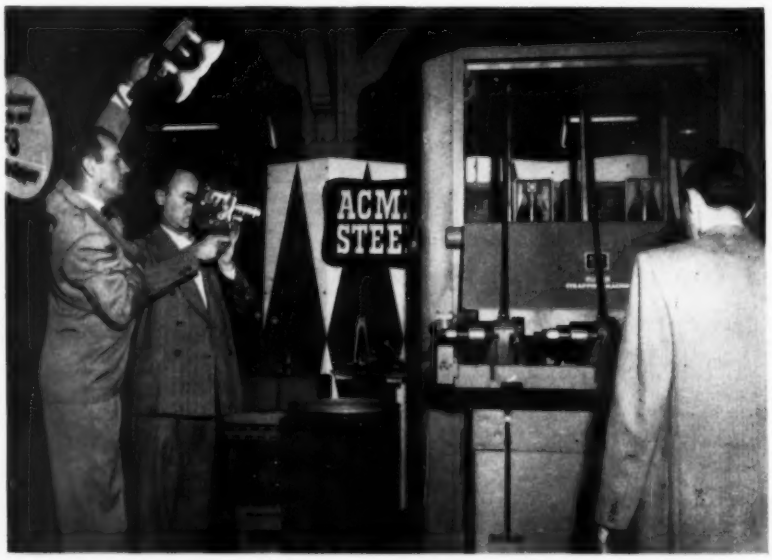
Three approaches to the problem of mechanical damage to products

Gretz ventured that the sources of mechanical damage to products in shipment can be controlled by three possible approaches to the problem: (1) increase of product strength to withstand shipping conditions, (2) improvement or modification of the transportation method, and (3) improvement of the package design.

"Since retooling and product modification is often an expensive procedure, and improvements in truck, rail or plane designs are difficult to obtain, *the third course is normally chosen* as increases in packaging costs are a small fraction of the value of the product, and design improvements can be quickly tested and put into effect," stated Gretz.

What cushioning does

Cushioning acts as a buffer between the container which should be strong enough to withstand the shipping conditions and the product which may not. Cushioning protects by absorbing, distributing or localizing the energy received by the container in such a manner that the product does not receive more energy than it is capable of withstanding, Gretz added.



These photos show a news cameraman taking movies of two of the exposition booths featured in a film of the exposition which was later televised in the Boston area. Acme Steel displayed a new "F3 Strapper", while Atlas Plywood demonstrated a machine which automatically packages appliances and other finished products right on the assembly line.

Materials handling engineers and Safe Transit Committee have one motto in common

James R. Williams, manager of sales promotion, Signode Steel Strapping Co., presented an address on the "Principles of Unit Bundling."

The job of the materials handling engineer, said Williams, gets him into every division, department and section of the company where he watches research of the new product, engineering of that product for quality and service ability, its production, its final assembly, its packaging, and finally its shipment.

The objective of the materials handling engineer and the steel strapping industry, stated Williams, are the same as that expressed by the motto of the *National Safe Transit Committee: "All manufacturing, engineering, and quality efforts are in vain if the product reaches its destination in a damaged condition."*

Getting on to his subject, Williams described "unitizing" as simply being more efficient in handling a commodity as one large unit rather than a couple hundred small items or bundles.

Specifically, "unitizing" permits: (1) full use of mechanical handling equipment, (2) more efficient use of warehouse floor space, (3) elimination of individual containers and their individual handling, (4) increased protection for products shipped, (5) faster in-plant, intra-plant and warehouse handling with elimination of most personal injury hazards, (6) easier and faster loading and unloading, and (7) faster counting and inventory record-keeping.

$107 million in claims last year

R. E. L. Harmon, special representative of the Freight Loss & Damage Prevention Section of the Association of American Railroads, told

to Page 104 →

CHICAGO MILL can help YOU deliver safely

Wirebound,
Nailed or Hinge Corner
Cleated Plywood
Cleated Craveneer
Cleated Corrugated
Watkins Type Containers
Shop and Tote Boxes
Woodsteel Nesting Boxes

★

FOR DOMESTIC OR EXPORT
FOR PEACE OR DEFENSE

A shipping container for every shipping purpose

Admiral and many other leading appliance manufacturers depend upon Chicago Mill and Lumber Company to provide safe shipment for their finished products.

If you are having difficulty in solving a troublesome shipping problem, call in a Chicago Mill representative. Technical information, packing information, and testing services are available without obligation.

FOR SAFER TRANSIT BY • TRUCK • BOAT • TRAIN • PLANE

CHICAGO MILL AND LUMBER COMPANY

33 South Clark Street **Chicago 3, Illinois**

Plants at: Helena, Arkansas • Greenville, Mississippi • Rockmart, Georgia
Tallulah, Louisiana • South Fork, Colorado • Chicago, Illinois

The role of the SAFE TRANSIT laboratory

SINCE the very inception of the National Safe Transit Program in 1948, Safe Transit Laboratories have played an important part in achieving the program's objectives. Today, theirs is still a growing role as manufacturers throughout the country in ever increasing numbers adopt the pre-shipment testing program for their packaged products.

Certification of a laboratory by the National Safe Transit Committee attests that the laboratory has installed all the necessary equipment for employing the Safe Transit Test Procedures that were developed by the NST Committee to simulate actual transit conditions, and is authorized to conduct these tests for manufacturers participating in the program or seeking certification. Certification further affirms that the laboratory has actively joined forces with industry and carriers in a cooperative and voluntary movement to reduce damage to packaged products in transit.

A great number of participants are using the services of a Safe Transit Laboratory. To these manufacturers, the Safe Transit Laboratory has meant that it was not necessary for them to install a testing laboratory before adopting the NST pre-shipment testing procedures for their packaged products. The manufacturer may submit his packaged product (product plus container) to the Safe Transit Laboratory with the assurance that in this "proving ground" it will be subjected to conditions simulating those it will actually encounter as it makes the journey from assembly line to consumer.

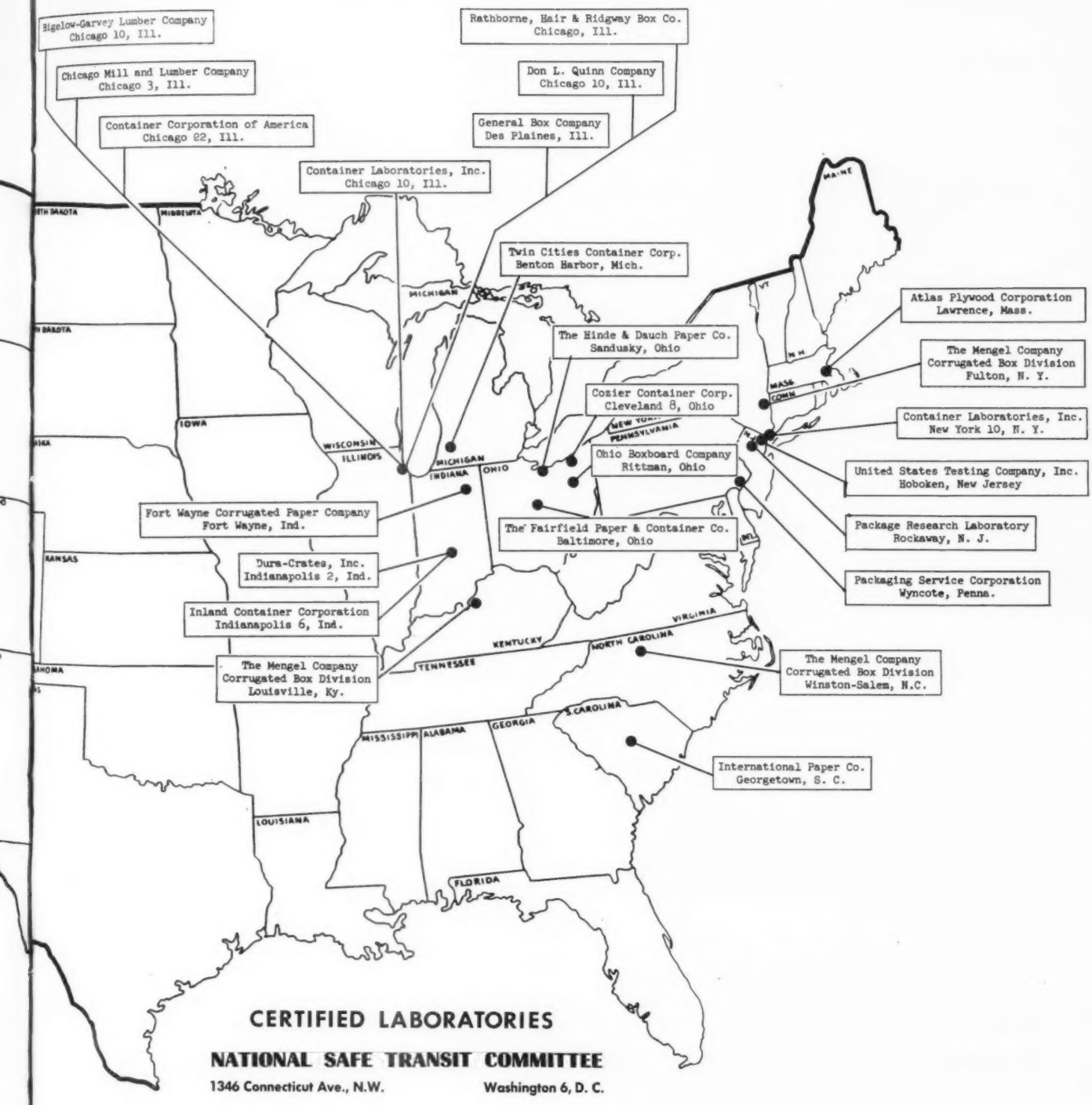
The satisfactory report of the Safe Transit Laboratory means, in addition, that his company may be certified under the National Safe Transit Program. The manufacturer is authorized to affix to his preshipment tested line of products the widely publicized red and yellow Safe Transit Label — his message to handling personnel that he had done his part to assure the safe delivery of his product.

Many of the larger manufacturers certified under the program have installed their own Safe Transit test equipment and are conducting the pre-shipment tests in their own plants. Daily testing is here maintaining the uniform quality of the product. Nearly all of these companies, however, are utilizing the testing facilities of Safe Transit Laboratories to correlate and substantiate day-to-day testing. Thus the laboratories serve to conduct umpire tests.

Both independent testing laboratories and laboratories operated in conjunction with container firms are certified under the Safe Transit Program. Their function is not only to determine prior to shipment whether or not the product will reach its destination safely; but,

A glance at the map will show that National Safe Transit Laboratories are located in 12 states in various sections of the country. There are still, however, areas where additional testing laboratories are needed.

These, as can be noted, are the South, Detroit, St. Louis, and the Northwest. In Canada, there is no Safe Transit Laboratory. The NST Committee feels that these areas present an opportunity to container firms and others in a position to provide a fully equipped Safe Transit Laboratory.



CERTIFIED LABORATORIES

NATIONAL SAFE TRANSIT COMMITTEE

1346 Connecticut Ave., N.W. Washington 6, D. C.

in those cases where packaged products fail the tests, to work with the manufacturer in the development of proper packaging. Not uncommon, too, has been the experience of manufacturers who found that their products were over-packed. Working with the Safe Transit Laboratories, they developed new packaging that has realized considerable savings in packaging costs.

For certification as a National Safe Transit Laboratory, the following equipment is required:

1. Vibration testing machine
2. Conbur incline testing device
3. Drop tester
4. Shock recorder

Approved sources for this equipment may be obtained by writing the headquarters office of the National Safe Transit Committee, 1346 Connecticut Avenue, N.W., Washington, D. C.

As the National Safe Transit Program moves into its sixth year, the role of the Safe Transit Laboratory is sharply defined. With manufacturers and carriers, Safe Transit Laboratories are committed to working together for the safe delivery of assembly line products.

CERTIFICATION FOR CALCINATOR, DOSTAL & LOWEY

The National Safe Transit Committee has announced the certifications of Dostal & Lowey Co., Inc., Menomonee Falls, Wisconsin, and Calcinator Corporation, Bay City, Michigan.

ANNOUNCE 1954 INDUSTRY-WIDE SAFE TRANSIT MEETING

the relationship of NST testing to engineering design, packaging costs and quality control will be covered

The National Safe Transit Committee has announced that its second Industry-Wide Safe Transit Meeting will be held at the Palmer House, in Chicago, on March 15, 1954. Chicago was also the scene of the first Industry-wide Meeting which drew attendance from over 300 industry, carrier and container representatives. This year proved no exception in the ever increasing interest that has marked the course of the 6-year old program, and the Committee is expecting even larger attendance at the 1954 meeting.

This coming program centers its attention on the use of the pre-shipment testing program in quality control, in reducing packaging costs, and as an aid in the engineering design of products. These and many other subjects will highlight the program, which will present leading spokesmen for American industry.

M. F. Weber, chairman of NST Loading Research Division.

Also featured on the program will be the premiere showing of a new Safe Transit film, illustrating testing of complete carload shipments. Chairman of this year's program committee is M. F. Weber, Southern Express Co., Chicago, who is also chairman of the Loading Research Division of the National Safe Transit Committee.

HINDE & DAUCH ACQUIRED BY W. VIRGINIA PULP & PAPER

Stockholders of West Virginia Pulp & Paper Co., New York City, have approved a plan to acquire The Hinde & Dauch Paper Co., Sandusky, Ohio, through an exchange of stock.

The exchange brings together two companies which were both founded 65 years ago. West Virginia manufactures paper and paperboard, while Hinde & Dauch manufactures corrugated shipping containers.

WINNERS IN PROTECTIVE PACKAGING, MATERIALS HANDLING COMPETITION

Winners in the 1953 Protective Packaging and Materials Handling Competition, as announced in Boston by the Society of Industrial Packaging and Materials Handling Engineers, are as follows:

Group 1 — *Corrugated or Solid Fibre Boxes* — 1st, Henry H. Kelly, Westinghouse Electric Corp., East Pittsburgh, Pa.; 2nd, Edward J. Lidgard, Packard Motor Car Co., Detroit; 3rd, Earl K. Gustin, Bendix Products Division, Bendix Aviation Corp., South Bend, Ind.

Group 2 — *Nailed Wood Boxes and Crates* — 1st, K. Russell Colcord, Hamilton Standard Division, United Aircraft Corp., Windsor Locks, Conn.; 2nd, W. E. Christopherson, Douglas Aircraft Co., Santa Monica, Calif.; 3rd, A. E. Sparling, Sparling Bros. Machine Co., New Bedford, Mass.

Group 3 — *Wirebound Boxes and Crates* — 1st, James B. Jones, Locke Department, General Electric Co., Baltimore, Maryland; 2nd, Earl Forsberg, Ohio Chemical & Surgical Equipment Co., Madison, Wis.; 3rd, W. Morneweck and L. Flynn, Engine & Foundry Division, Ford Motor Co., Dearborn, Mich.

Group 4 — *Cleated Panel Boxes* — 1st, Eugene Wald, Allen B. DuMont Laboratories, Inc., Clifton, N.J.; 2nd, Louis W. Krombein, Ruslander & Sons, Inc., Buffalo; 3rd, Charles E. Swanson, Art Metal Construction Co., Jamestown, N.Y.

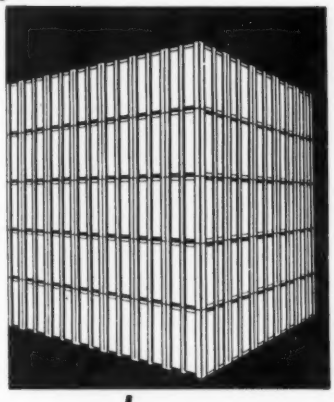
Group 5 — *General* — 1st, Julius J. Puchy, Weston Electrical Instrument Corp., Newark, N.J.; 2nd, John J. Weller, Radio Corporation of America, Lancaster, Pa.; 3rd, Wesley A. Rider, Federal Motor Truck Division, Federal Fawick Corp., Detroit, Michigan.

Group 6 — *Export Packages* — 1st, Alan Cohen, Steiner Plastics Mfg. Co., Inc., Glen Cove, N.Y.

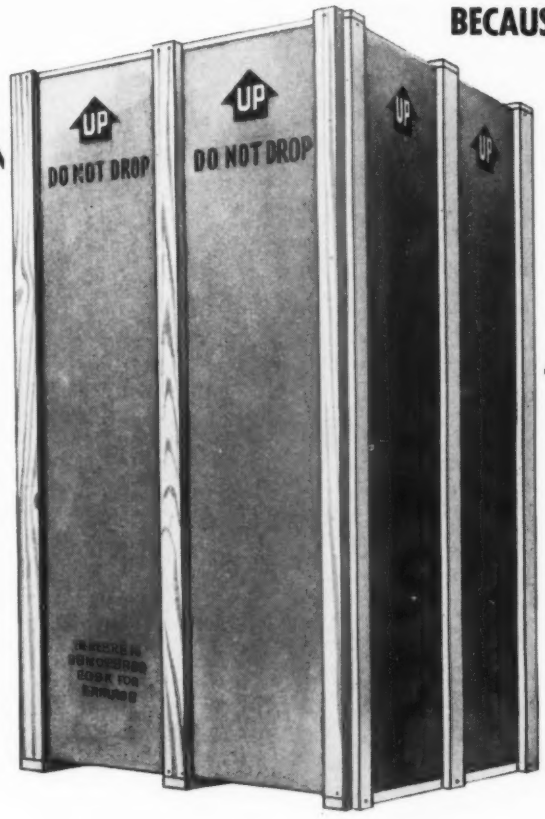
Group 7 — *Materials Handling* — 1st, W. H. Richardson, The Driscoll Wire Co., Shelton, Conn.; 2nd, John F. Curtin, Ternstedt Division, General Motors Corp., Trenton, N. J.; 3rd, Earl K. Gustin, Bendix Products Division, Bendix Aviation Corp., South Bend, Indiana.

KIECKHEFER MILWAUKEE

WATKINS CONTAINERS ARE BETTER



BECAUSE.....



Producers of economical product protection for "around the corner or across the nation". Service includes Pallets, Kieckhefer Paletboxes, Industrial Lumber and specially-designed special-purpose containers.

You receive faster service and better quality as all components are manufactured complete on modern equipment in our own plants.

Cleats are permanently attached to the corrugated board with moisture resistant glue — *under pressure of hydraulic equipment* resulting in smooth interiors with no obstructions to damage the fine finished products.

The tube corners are stapled on automatic equipment insuring close evenly spaced stitches and are additionally reinforced with a special cement.

Skid bases are manufactured for strength. The parts are accurately assembled on new modern nailing equipment. All mounting holes are drilled simultaneously on special equipment insuring absolute accuracy.

Whether your current problem is fragile neon signs, industrial equipment or finished products in volume production—check Kieckhefer-Milwaukee for a practical, economical solution.

PACKAGING ENGINEERS KIECKHEFER MILWAUKEE FOR FIFTY YEARS

KIECKHEFER BOX AND LUMBER CO.

• WOODEN BOXES • BOX SHOOKS • CRATES • CLEATED FIBRE SHIPPING CONTAINERS •

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ADVERTISERS' INDEX

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"I saw your ad in finish"

Industrial packaging, handling exposition

→ *from Page ST-10*

the packaging and materials handling engineers that the total amount paid out in freight loss and damage during 1952 amounted to $107,695,978, with 85% of the damage involving carloads.

Although last year's claims were $28 million below the 1948 all-time high, they were up $7 million over 1951.

To combat freight loss and damage, he asked that shippers "engineer" their packages and interior packaging to give the best possible protection for their products. He asked that receivers make their contribution by promptly transmitting information of damage.

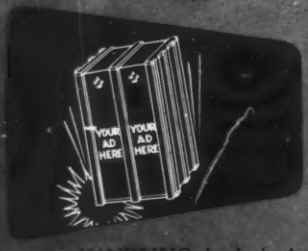
Harmon concluded that "a shipper forearmed with the type and nature of damage to his shipments, with an open mind in the analysis of causes, maintenance of the desired supervision in all phases of packaging and materials handling, has gone a long way within his control toward overcoming the hazards of shipping."

TEMCO NAMES BAIRD TRAFFIC MANAGER

Temco, Inc., Nashville, manufacturers of gas heating appliances and gas clothes dryers, has announced the appointment of Harry Baird as traffic manager, succeeding Bill Cordell who has joined Hoover Motor Express Co. Baird joined Temco from Oak Ridge, Tenn., where he was in charge of motor freight for Carbide and Carbon Chemical Co.

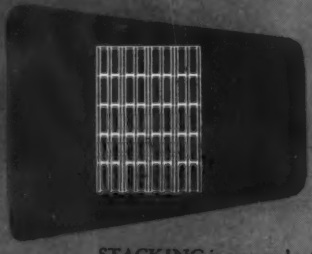
WATKINS Containers cut shipping costs

ASSEMBLY is speeded up with this easy-to-handle container. The assembly crews are all for packing the Watkins Way.



HANDLING shocks in the factory, in transit, and during delivery are resisted by the wood cleats, glued tube mat construction.

STORING problems are reduced to a minimum because of the 3-section design which provides for flat, close nesting.

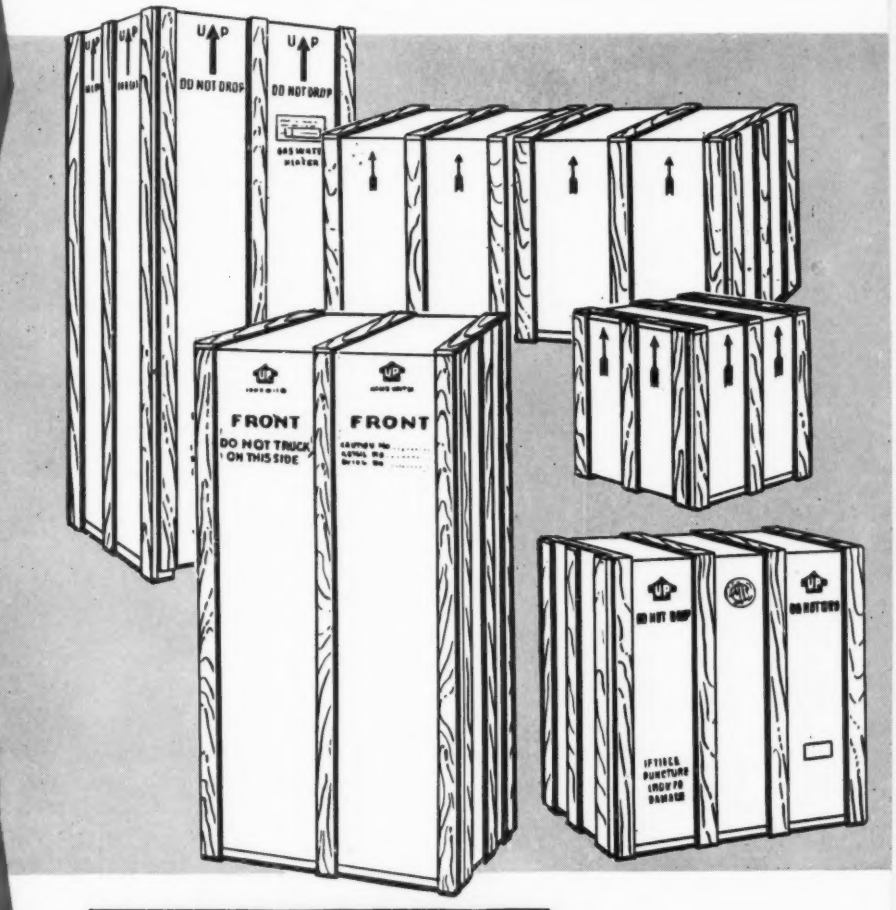


STACKING is easy and safe, due to the supporting strength (minimum 4 tons on most containers) that is *engineered* into the Watkins design.

WATKINS Cleated, Corrugated Containers will cut your shipping costs. They are delivered to your factory 75% assembled and designed for quick and easy completion, to save you labor, time, and expense. Scientific design gives maximum strength, yet keeps container weight at a minimum and reduces your shipping costs.

In a Watkins Container your product is COMPLETELY protected—enclosed 100% by a smooth, staple-free interior to safeguard fine finishes and to keep out dust and dirt.

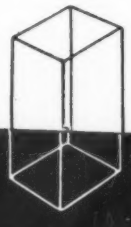
Ship your carefully manufactured products safely and economically—ship them the "Watkins Way."



These companies build WATKINS Containers

Cornell Paperboard Products Co. .... 1514 E. Thomas Ave., Milwaukee, Wis.
Cozier Container Corp. ..... 446 East 131st Street, Cleveland, Ohio
Crate-Rite Mfg. Corp., Division of Pacific Ports Ind. Inc.
..... 10901 Russett Street, Oakland, California
Dura-Crates, Inc. ..... 940 East Michigan Street, Indianapolis, Indiana
General Box Co. ..... 1825 Miner St., Des Plaines, Illinois, and 16th and Maple Sts., Louisville, Kentucky
Hemb & Martin Mfg. Co. ..... Watseka, Illinois
Illinois Box & Crate Co. ..... 811 Center Street, Plainfield, Illinois
Kieckhefer Box & Lumber Co. .... 1715 West Canal Street, Milwaukee, Wis.
Lane Container Corp. ..... 10212 Denton Road, Dallas, Texas
Lewisburg Container Co. ..... 243 Singer Street, Lewisburg, Ohio
Livingston Wood Manufacturing, Ltd. ..... Tillsonburg, Ontario, Canada
Love Mfg., Inc. ..... 608 South Commerce Street, Wichita, Kansas
Pennsylvania Box & Lumber Co. .... 2331 N. Bodine St., Philadelphia 33, Pa.
Utility Crate Corporation .... 1985 E. 16th Street, Los Angeles 21, California

—an inquiry to any of these companies will get prompt attention—



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for guaranteed metal cleaning performance

When you give the go-signal to Detrex, you put into motion a skilled team of metal cleaning specialists. Their sole job—to cut your cleaning costs, to improve your cleaning quality.

Detrex, and only Detrex, manufactures both the equipment and chemicals for alkaline and emulsion washing, solvent degreasing, even cleaning by sound waves.*

As a result Detrex field engineers are familiar with all types of metal cleaning—can evaluate your cleaning operations without bias or limitation. At the same time, recommendations they make to you are carefully developed by equipment engineers and chemists working as a team. The outcome is a well-integrated process embodying the most economical combination of equipment and chemicals for the job . . . considering both initial and operating costs.

Because responsibility for the complete process is in the hands of one company, Detrex, results are fully guaranteed.

You can measure the benefits to your own metal cleaning operations without cost or obligation. All you have to do is request a free survey by our specialists. And there is no better time to do it than now!

for free survey

At no obligation to you, the Detrex field man in your area will come in and survey your present or proposed operations. There is no cost for the service. The result will prove to you the money-saving advantages of Detrex service. Just fill out and mail the coupon below . . . our field man will call you for the most convenient time to come in.

*Detrex Sonicleon® Process

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DETROIT 32, MICHIGAN

Please have the Detrex man in our area make an appointment to survey our operations to point up ways of cutting cleaning costs.

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COMPANY_____

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